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**THE  
ZOOLOGICAL RECORD**

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**VOLUME 34  
1897**

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THE  
ZOOLOGICAL RECORD

VOLUME THE THIRTY-FOURTH.

BEING

RECORDS OF ZOOLOGICAL LITERATURE

RELATING CHIEFLY TO THE YEAR

1897.

BY J. A. THOMSON, R. LADEKKER, R. BOWDLER SHARPE, G. A. BOULENGER,  
W. A. HERDMAN, E. R. SYKES, E. A. SMITH, G. C. CRICK, A. W. BROWN,  
D. SHARP, F. A. BATHER, FLORENCE BUCHANAN, AND R. VON LENDENFELD.

EDITED (FOR THE ZOOLOGICAL SOCIETY OF LONDON) BY

DAVID SHARP, M.A., F.R.S., F.Z.S., &C.,

*Curator in Zoology, University Museum of Zoology, Cambridge.*

Explorate solum : sic fit via certior ultra

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*Reprinted by arrangement with the Zoological Society*

NEW YORK:

JOHNSON REPRINT CORPORATION

LONDON:

BUTTERWORTHS

## **Distributors**

**U.S.A.:**                      **Johnson Reprint Corporation,**  
                                 **111 Fifth Avenue,**  
                                 **New York 3, N.Y.**

**U.K. and all Countries** **Butterworths & Co. (Publishers) Ltd..**  
**other than U.S.A.:**      **88 Kingsway, London, W.C. 2.**

**First Reprinting, 1963**

**Printed in the United States**

## PREFACE.

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OWING to the punctuality of the various Recorders and the promptness of the printers, the thirty-fourth volume of the Zoological Record appears as early as any of its predecessors.

Mr R. T. Günther left England at a period of the year so early that only a very incomplete Record of Cœlenterata could then have been prepared; he therefore preferred that this subject should be altogether omitted; but he hopes to be able to furnish a Record of its progress in 1897 and 1898 in our next volume.

D. SHARP.

CAMBRIDGE,

*August 29th, 1898.*



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By the EDITOR.





ALPHABETICAL LIST  
OF THE  
ABBREVIATIONS  
USED IN THE  
ZOOLOGICAL RECORD, Vol. XXXIV, 1897,  
FOR THE  
TITLES OF THE JOURNALS, TRANSACTIONS, ETC.  
THAT CONTAIN ZOOLOGICAL PAPERS ;  
WITH INDICATIONS OF SOME OF THE PRINCIPAL  
LIBRARIES  
IN WHICH THE BOOKS ARE CURRENT.

THE primary object of this list is to enable those using the Record to find with ease the full title of a Journal they see quoted in an abbreviated form. The arrangement is therefore a simple alphabetical list of the abbreviations, uncomplicated by syllabic or verbal limitations.

The list has also to serve the Recorders and others as a list of Journals, and for this purpose it is important that it should be fairly complete as regards current periodicals. In order to increase the utility of the list, the abbreviations have been made on a uniform system; but a few exceptions have, in practice, been found necessary. The chief points that have been kept in view in constructing the abbreviations may be briefly stated as follows:—

The words selected as distinctive in each title are reduced in most cases to three or four.

A distinct abbreviation is used for each different word, and the same abbreviation for the same word is used throughout the list.

Accents are omitted. As a rule the first word of the title is represented by an abbreviation, but this rule is departed from in the case of articles and prepositions, and occasionally in the case of adjectives that are useless for distinctive purposes. Thus "Annual Report" becomes "Rep.," and "Occasional Papers" becomes "Pap." Such adjectives as "New" and "Royal" are omitted, except when necessary for distinctive or other purposes.

The consecutive order of the words of the title is maintained in the abbreviation, except in a few cases where the arrangement of the words in the title is very unusual or faulty.

As an example of the form of abbreviation that is aimed at, we may take Bull. Soc. Moscou. The name of the locality is given at greater length than the more frequently used portions of the abbreviation.

After the titles, the place of publication is given, and this is followed by letters indicating some of the principal libraries in which the works may be consulted. The explanation of these letters is as follows:—

- N. = British Museum Natural History: general library.  
 Nz. = " " library, zoological department.  
 Ng. = " " " geological " "  
 K. = Science library; South Kensington Museum.  
 R. = Royal Society library.  
 Z. = Zoological Society library.  
 L. = Linnean " "  
 C. = Cambridge University library.  
 C, p or (C) p = Cambridge Philosophical Society library.  
 b, or g, or y, after C, or (C) = Cambridge Balfour, or Woodwardian Museum, or Physiological libraries respectively.  
 O. = Radcliffe library, Oxford.  
 § is appended to titles added since the last list.

- Abeille*—L'Abeille: Journal d'entomologie publié par la Société entomologique de France. (Paris, 8vo.) Nz.  
*Abh. Ak. Berlin*—Abhandlungen der königlichen Akademie der Wissenschaften zu Berlin. (Berlin, 4to.) N. K. R. Z. L. C, p. O.  
*Abh. Bayer. Ak.*—Abhandlungen der mathematisch-physikalischen Classe der königlichen Bayerischen Akademie der Wissenschaften. (München, 4to.) N. K. R. Z. L. C, p. O.  
*Abh. Böhmisch. Ges.*—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmischen Gesellschaft. [Called also] Rozpravy trždy mathematicko-přirodvěcke královské Ceske společnosti Nauk. (Prag, 4to.) N. K. R. L. C, p.  
*Abh. geol. Karte Elsass*—Abhandlungen zur geologischen Spezial-Karte von Elsass-Lothringen. (Strassburg, 8vo.) Ng.  
*Abh. geol. Landesanst. Darmstadt*—Abhandlungen der grossherzoglich Hessischen geologischen Landesanstalt zu Darmstadt. (Darmstadt, 8vo.) Ng.  
*Abh. geol. Reichsanst.*—Abhandlungen der Kaiserlich-Königlichen geologischen Reichsanstalt. (Vienna, 4to.) Ng. R. L. C, p.  
*Abh. Ges. Görlitz*—Abhandlungen der naturforschenden Gesellschaft zu Görlitz. (Görlitz, 8vo.) N. K. R.  
*Abh. Ges. Götting.*—Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen. (Göttingen, 4to.) N. R. Z. L. C, p. O.  
*Abh. Ges. Halle*—Abhandlungen der naturforschenden Gesellschaft zu Halle. (Halle, 4to.) N. K. R. Z. L. C. O.  
*Abh. Ges. Isis*—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (Dresden, 8vo.) N. K. Z. C.  
*Abh. Ges. Königsb.*—[Part of *Schr. Ges. Königsb.*, q.v.]  
*Abh. Ges. Nürnberg*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (Nürnberg, 8vo.) N. K. C.

- Abh. Ges. Wien*—[Part of *Verh. Ges. Wien*, q.v.]
- Abh. Hamburg. Anst.*—[Part of *Jahrb. Hamburg. Anst.*, q.v.]
- Abh. Mus. Dresden*—Abhandlungen und Berichte des königlichen zoologischen und Anthropologisch ethnographischen Museums zu Dresden. (Berlin, 4to.) N. Z. C.
- Abh. Preuss. geol. Landesanst.*—Abhandlungen der königlich Preussischen geologischen Landesanstalt (Neue Folge). [Formerly *Abh. geol. Spezialkarte von Preussen und den Thüringischen Staaten.*] (Berlin, 8vo.) Ng. K. C.
- Abh. Sachs. Ges.*—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften. (Leipzig, 4to.) N. K. R. C, p.
- Abh. Schweiz. pal. Ges.*—Abhandlungen der Schweizerischen paläontologischen Gesellschaft. *Mémoires de la Société Paléontologique suisse.* (Basel, &c., 4to.) Ng. R. Z. (C) g. O.
- Abh. Senckenb. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft. (Frankfort a.-M., 4to.) N. K. R. Z. L. C. O.
- Abh. Ver. Bremen*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen. (Bremen, 8vo.) N. K. R. Z. L. C.
- Abh. Ver. Hamburg*—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturwissenschaftlichen Verein in Hamburg. (Hamburg, 4to.) N. K. R. Z. L. C, b.
- Abh. Ver. Karlsruhe*—[Vide *Verh. Ver. Karlsruhe.*]
- Abh. Ver. Kassel*—[Issued with *Ber. Ver. Kassel*, q.v.]
- Acta Ac. German.*—N. Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ naturæ curiosorum. [Called also] *Verhandlungen der k. Leop.-Carol. deutschen Akademie der Naturforscher.* (Halle, 4to.) N. K. R. Z. L. C, p. O.
- Act. Ac. Cordoba*—Actas de la Academia nacional de Ciencias en Córdoba. (Buenos Aires, 4to.) N. R. Z. L.
- Acta Soc. Faun. Fenn.*—Acta Societatis pro Fauna et Flora Fennica. (Helsingfors, 8vo.) N. R. L.
- Acta Soc. Lund.*—Acta regię Societatis physiographicę Lundensis. [Published as part of *Acta Univ. Lund.*, q.v.]
- Acta Soc. Sci. Fenn.*—Acta Societatis Scientiarum Fennicę. (Helsingfors, 4to.) N. K. R. Z. (C) p.
- Acta Soc. Upsal.*—Nova Acta regię Societatis Scientiarum Upsaliensis. (Upsala, 4to.) N. K. R. Z. L. C, p.
- Acta Univ. Lund.*—Acta Universitatis Lundensis. [Called also] *Lunds Universitets Årsskrift*, [and includes] *Acta regię Societatis physiographicę Lundensis*, [also called] *Kongl. fysiografiska Sällskapets i Lund Handlingar.* (Lund, 4to.) N. K. R. L. C, p.
- Act. Soc. Bordeaux*—Actes de la Société Linnéenne de Bordeaux. [Includes *Comptes rendus.*] (Bordeaux, 8vo.) N. Z. C.
- Act. Soc. Chili*—Actes de la Société scientifique du Chili. (Santiago, 4to.) R. Z.
- Act. Soc. Espan.*—Actas de la Sociedad española de historia natural. (Madrid, 8vo.) § N. R. Z. C.
- Act. Soc. Helvet.*—Actes de la Société Helvétique des Sciences naturelles. [Called also] *Verhandlungen der schweizerischen Naturforschenden Gesellschaft.* (Basel, &c., 8vo.) N. K. R. L. C. O.

- Afh. Mus. Lund.*—E Museo Lundii. En Samling af Afhandlinger. (Kjobnhavn, 8vo.) N. R. Z. L.
- Agric. Gaz. N. S. W.*—The Agricultural Gazette of New South Wales. (Sydney, 8vo.) Nz. R.
- Amer. Geol.*—The American Geologist, a Monthly Journal of Geology and allied Sciences. (Minneapolis, 8vo.) Ng. K. O.
- Amer. J. Sci.*—The American Journal of Science. (New Haven, 8vo.) N. K. R. Z. C, p. O.
- Amer. Micr. J.*—The American Monthly Microscopical Journal. (Washington, 8vo.) N. O.
- Amer. Natural.*—The American Naturalist. (Philadelphia, 8vo.) N. K. Z. L. C, b. O.
- Anat. Anz.*—Anatomischer Anzeiger. Centralblatt für die gesamte wissenschaftliche Anatomie. Amtliches Organ der anatomischen Gesellschaft. (Jena, 8vo.) Nz. K. Z. (C) b. O.
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- Arch. Zeeuwsch Genoots.*—Archief. Vroegere en latere Mededeelingen voornamelijk in betrekking tot Zeeland, uitgeven door het Zeeuwsch Genootschap der Wetenschappen. (Middelburg, 8vo.) N.
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# THE ZOOLOGICAL RECORD

## FOR 1897.

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BY

J. ARTHUR THOMSON, M.A.

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## II. MAMMALIA.

BY

R. LYDEKKER, B.A., F.R.S., F.G.S.

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## INTRODUCTION.

THE attention devoted to Mammals during the last few years shows no sign of waning, the number of papers here recorded being considerably in excess of the preceding year, and the number of forms described as new being proportionately large.

The two items most worthy of special mention appear to be the description of the placentation of *Perameles* by HILL, and the tracing of the ancestry of the modern *Edentata* to the extinct *Ganodontia* by WORTMAN. One of these discoveries promises to revolutionize our ideas of the relationship of the *Marsupialia* to the *Placentalia*, while the other serves to bring into line a group previously isolated.

A new feature in the year's work is the attention directed to the distribution of Marine Mammals by P. L. SCLATER, supplemented by important observations on the part of GILL and ORTMANN respectively. W. L. SCLATER continues his work on the terrestrial distribution of the class; while among faunistic work special reference may be made to the labours of GRAELLS on the Mammals of Spain, and to the completion of POUSARGUES's work on those of the French Congo. FORSYTH MAJOR's memoir on the relationships of the Malagasy Rodents is likewise worthy of note.

EARLE's papers on the relation of *Tarsius* to the other Lemuroids and of the latter to the higher *Primates* are also of more than ordinary importance; and in connection with this the researches of MATTHEW on the presumed Lemuroids of the Puerco fauna may claim mention. DUVAL continues his investigations into the reproduction of the *Chiroptera*. In the elaborate monographs of SEMON's travels we find much important information with regard to the anatomy of Marsupials and Monotremes, by EMERY, ZIEHEN, and others; while in the same series, as also in other papers, KÜKENTHAL contributes to our knowledge of the Sirenians. The number and succession of the teeth in the latter group has also received attention during the year; and, among other papers on the subject, reference may be made to LECHE's investigations on the dentition of the *Insectivora* generally, which have been supplemented by those of FORSYTH MAJOR on the dental succession in the *Centetidae*. Of special importance are the researches of WILSON & HILL in regard to the succession and homology of the teeth in *Perameles* and Marsupials generally.

A considerable amount of work has been devoted to the brain in various groups, among which G. E. SMITH's investigations into the origin of the corpus callosum are perhaps those of most general importance. Myology has likewise come in for a considerable share of attention, especially at the hands of PARSONS and WINDLE.

Systematic work has been by no means neglected, all the familiar names, on both sides of the Atlantic, being to the fore. None of the animals described are, however, of such a nature as to call for special mention, unless it be a new Papuan representative of the *Hydromyinae*. The *Cetacea* have received more attention than usual; among the most interesting discoveries being the origin of the peculiar markings observable on the skin of RISSO's Grampus.

As regards classificatory works, the first place is occupied by the new and revised edition of TROUESSART's *Synopsis Mammalium*, of which three parts have appeared during the year. Of minor import is PALMER's list of the generic names and synonyms of the *Rodentia*, which forms a supplement to THOMAS's list of the preceding year.

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*Dasypterus ega xanthinus*, n. subsp., THOMAS, Ann. Nat. Hist. (6) xx, p. 544, Lower California.

## EMBALLONURIDÆ and PHYLLOSTOMATIDÆ.

*Nyctinomus lorice*, THOMAS, Ann. Mus. Genova (2) xviii, p. 609, Papua; *N. martiensseni*, MATSCHIE, Arch. Naturg. lxiii, 1, p. 84, German E. Africa: n. spp.

*Saccopteryx infusca*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 546, Ecuador.

*Artibeus (Dermanura) rosenbergi*, THOMAS, *t. c.* p. 545, Ecuador; *palmarium*, ALLEN & CHAPMAN, p. 16, Trinidad, *intermedius*, ALLEN, p. 33, Costa Rica, Bull. Amer. Mus. xi: n. spp.

*Glossophaga truei*, n. n., H. ALLEN, Science (2) v, p. 152, to replace *G. villosa*, ALLEN, 1894, *nec* Reugger, 1830.

## III. INSECTIVORA.

Morphology of dentition; LECHÉ, Anat. Anz. xiii, p. 1.

## TUPAIIDÆ and MACROSCOLIDÆ.

- Tupaia muelleri*, n. sp., KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) iv, p. 196 (1895), Borneo.  
*Petrodomus rovomæ*, p. 434, *sultan*, p. 435, n. spp., THOMAS, P. Zool. Soc. London, 1897, Nyasaland.  
*Macroscelides brachyrhynchus malosæ*, n. subsp.; THOMAS, t. c. p. 928, Nyasaland.

## SORICIDÆ and TALPIDÆ.

- Blarina thomasi*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 227, Colombia.  
*Notiosorex gigas*, n. sp., MERRIAM, t. c. p. 227, Mexico.  
*Sorex sclateri*, p. 228, Mexico, *salvini*, p. 229, *godmani*, p. 229, Guatemala, n. spp., MERRIAM, t. c.  
*Crociodura liza*, THOMAS, p. 930, Nyasaland, *whitakeri*, DE WINTON, p. 954, Morocco, P. Zool. Soc. London, 1897, n. spp.  
*Pachyura krooni*, n. sp., KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) iv, p. 197, Borneo.  
*Myosorex (?) sorella*, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 930, Nyasaland.  
*Scapanus alpinus*, Oregon, *truei*, California, n. spp., MERRIAM, P. Soc. Washington, xi, p. 102.  
*Neurotrichus gibbsi hyacinthinus*, n. subsp., BANGS, Amer. Natural. xxxi, p. 240, California.  
*Talpa europæa*, biliary ducts; SCAMPANI, Monit. Zool. ital. viii, p. 56: utility of; JOYEUX-LAFFUE, Bull. Soc. Normand. (4) x, p. 52.

## CENTETIDÆ.

Dentition; F. MAJOR, Ann. Nat. Hist. (6) xx, p. 525.

## IV. CARNIVORA.

The Pleistocene Algerian forms described by POMEL, Carte Géol. Algérie, Pal. Mon., they include species of *Felis*, *Herpestes*, *Hyæna*, and *Ursus*.

## FELIDÆ and VIVERRIDÆ.

- N. American fossil *Felidæ*; ADAMS, Amer. J. Sci. (4) iv, p. 145.  
*Felis hippolestes*, p. 219, Wyoming, *hippolestes olympus*, p. 220, Olympic Mountains, Washington, n. sp. & subsp., MERRIAM, P. Soc. Washington, xi, p. 220. *F. serval*, melanistic variety; LÖNNBERG, Zool. Jahrb. Syst. x, p. 569. *F. catus*, in Scotland; HAMILTON, Ann. Scott. Nat. Hist. vi, p. 65. *F. caffra*, in South Europe; LORENZ, Verh. Ges. Wien, xlviii, p. 341. *F. tigris virgata*, from Caspian, and *F. t. longipilis*, from Manchuria; MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 13.  
*Lynx rufus eremicus*, p. 457, *rufus californicus*, p. 458, MEARNs, P. U. S. Mus. xx, California; *subsolanus*, p. 49, Newfoundland, *gigas*, p. 50, Nova Scotia, BANGS, P. Soc. Washington, xi: n. spp. & subsp.  
†*Hoplophoneus occidentalis*, osteology; RIGGS, Kansas quart. v, p. 37.  
*Arctogalidia*, n. nom., MERRIAM, Science (2) v, p. 302, for *Arctogale*, Gray, 1864, *neo* Kaup, 1829.



- Bdeogale nigripes*, its validity; POUSARGUES, Bull. Mus. Paris, 1897, p. 202.  
*Helogale atkinsoni*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 378, Somaliland.

## CANIDÆ and URSIDÆ.

- Canis familiaris tenggerana*, KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) v, p. 283 (1896), and JENTINK, Notes Leyden Mus. xviii, p. 217, pls. iv & v, Tengger Mountains, Java. *C. mensesi*, p. 518, *mesomelas schmidtii*, p. 519, Somaliland, *wunderlichi*, p. 519, Africa, NOACK, Zool. Anz. xx: n. spp. & subsp. *C. latrans*, divided by MERRIAM, P. Soc. Washington, xi, into the following n. spp., viz.: *pallidus*, p. 24, *lestes*, p. 25, *peninsulae*, p. 28, *microdon*, p. 29, *mearnsi*, p. 30, *estor*, p. 31, *vigilis*, p. 33; *frustor*, Woodhouse, 1851, *cagottii*, H. Smith, 1839, and *ochropus*, Eschscholtz, 1829, are also recognised as species; *vulpes* and *familiaris*, hybrid, TONI, Atti Ist. Veneto (7) viii, p. 912; *hadramanticus*, NOACK, 1896 = *lupaster*, MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 73.  
*Canis (Pseudalopex) lycoides*, n. sp., PHILIPPI, An. Univ. Chile, 1896, p. 1, Chili.  
*Urocyon cinereoargenteus texensis*, Texas, *cinereoargenteus californicus*, California, n. subsp., MEARN, P. U. S. Mus. xx, p. 459.  
*Vulpes pennsylvanica vafra*, n. subsp., BANGS, P. Soc. Washington, xi, p. 53, Nova Scotia; *lagopus*, in Turkestan, BÜCHNER, Annuaire Mus. St. Petersb. 1897, p. 393.  
*Ursus arctus* and allied forms, synopsis of; LYDEKKER, P. Zool. Soc. London, 1897, p. 412; *U. pruinus* being figured, and *U. arctus yezoensis*, p. 422, Yezo, new; another skin of *pruinus* noticed on p. 814; *rexii*, n. sp., MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 72, Japan; *tetruscus*, osteology; RISTORI, Mem. Pal. Ital. iii, p. 15.

## MUSTELIDÆ and PROCYONIDÆ.

- Mustela melampus tsuensis*, THOMAS, Ann. Nat. Hist. (6) xix, p. 161, Tsu-shima I.; *atrata*, BANGS, Amer. Natural. xxxi, p. 162, Newfoundland: n. sp. and subsp. *M. subpalmata*, noticed, ANDERSON, P. Zool. Soc. London, 1897, p. 600.  
*Putorius brasiliensis paraensis*, n. subsp., GOELDI, Zool. Jahrb. Syst. x, p. 562, Para.  
*Spilogale pygmaea*, THOMAS, P. Zool. Soc. London, 1897, p. 898, Sinaloa, W. Mexico, *ambigua*, MEARN, P. U. S. Mus. xx, p. 460, Mexico: n. spp.  
*Mephitis occidentalis holzneri*, p. 461, Lower California, *milleri*, p. 467, Arizona, n. subsp. and sp., MEARN, *t. c.*  
*Taxidea taxus infusca*, n. subsp., THOMAS, P. Zool. Soc. London, 1897, p. 899, Lower California.  
*Lutra annectans*, n. sp., MAJOR, Zool. Anz. xx, p. 142, and Ann. Nat. Hist. (6) xix, p. 618, Central America.  
*Latax lutris*, habits and distribution in Alaska; HOOPER (124).  
*Procyon lotor*, myology of hind-limb; GOWELL, Kansas quart. vi, p. 121.  
*Bassariscus sarricola*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 185, Espiritu Santo I., Lower California.  
*Potos*, Cuv. and Geof., 1795, antedates *Cerooleptes*, Illiger, 1811; PALMER, *t. c.* p. 174.

## OTARIIDÆ, ODOBÆNIDÆ, and PHOCIDÆ.

Eared Seals of Galapagos; BAUR, Science (2) v, p. 956.

*Arctocephalus townsendi*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 175, Guadalupe I., Lower California.

*Odobænus obes*, its characters; BARRETT-HAMILTON, P. Zool. Soc. London, 1897, p. 266. *O. rosmarus*, in Iceland; SEMUNDSSON, Vid. Medd. 1897, p. 201.

Habits of northern species of *Phocidæ*; ROBINSON (266). *Phoca fetida*, from Norway; COLLETT, Arch. Naturv. Christian. 1897, p. 3. †*P. vindobonensis*, n. sp.; TOULA, Beitr. Pal. Oesterr.-Ung. xi, p. 47, Tertiary, Hungary.

## †CREODONTIA.

Puerco forms; MATTHEW, Bull. Amer. Mus. ix, p. 259.

†*Oryzomys huerfanensis*, n. sp., OSBORN, t. c. p. 255, Tertiary, Colorado.

## V. RODENTIA.

PALMER, Science (2) vi, p. 103, criticises Thomas's arrangement of the order, and makes some emendations in nomenclature—notably that *Cricetus*, Cuvier, antedates *Hamster*, Lacépède. Other emendations in nomenclature; THOMAS, t. c. p. 485. Development of dentition; ADLOFF, Zool. Anz. xx, p. 324. Bohemian fossil Steppe Rodents; NEHRING, N. Jahrb. Min. 1897, ii, p. 220.

## ANOMALURIDÆ and SCIURIDÆ.

*Anomalurus batesi*, n. sp., DE WINTON, Ann. Nat. Hist. (6) xx, p. 524, Gaboon district.

*Sciurus indicus dealbatus*, p. 301, W. of Kandesh, *i. bengalensis*, p. 303, Bengal, &c., BLANFORD, J. Bombay Soc. xi; *peruanus*, J. A. ALLEN, Bull. Amer. Mus. ix, p. 115, Peru; *fossor anthonyi*, MEARN, P. U. S. Mus. xx, p. 501, California; *hudsonius orarius*, N. California, BANGS, P. Soc. Washington, xi, p. 281; *hudsonius mearnsi*, N. California, TOWNSEND, t. c. p. 146; *jacksoni*, E. Africa, DE WINTON, Ann. Nat. Hist. (6) xix, p. 575: n. spp. & subspp.

*Xerus* (*Paraxerus*) *lucifer*, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 430, Masaku Mts., Nyasaland; renamed *Funisciurus lucifer*, t. c. p. 932, pl. liv, the genus *Sciurus* being split up into seven on p. 933.

*Eutamias*: notes on the group, p. 189, *townsendi ochrogenys*, p. 206, California, *oreocetes*, p. 207, Montana, *speciosus inyoensis*, p. 208, California, *palmeri*, p. 208, Nevada, *dorsalis utahensis*, p. 210, Utah, n. spp. & subspp., MERRIAM, P. Soc. Washington, xi.

*Sciuropterus*, W. American species; RHOADS, P. Ac. Philad. 1897, p. 314; *alpinus klamathensis*, n. subspp.; MERRIAM, P. Soc. Washington, xi, p. 225, Ft. Klamath, Oregon.

## CASTORIDÆ and GLIRIDÆ.

*Castor canadensis frondator*, n. subsp.; MEARN, P. U. S. Mus. xx, p. 502, Sonora, Mexico. *C. fiber*, in Norway; COLLETT, Bergens Mus. Aarbog, 1897, No. 1.

*Graphiurus platyops*, THOMAS, xix, p. 338, Mashonaland, *angolensis*, DE WINTON, xx, p. 321, Angola, Ann. Nat. Hist. (6); *johnstoni*, THOMAS, P. Zool. Soc. London, 1897, p. 934, Nyasaland: n. spp.

## MURIDÆ.

Distribution of *Synaptomys*, *Microtus*, and *Eutamias*; BATCHELDER, P. Boston Soc. xxvii, p. 185.

F. MAJOR, P. Zool. Soc. London, 1897, p. 695, discusses the affinities of *Brachyuromys*, and enters into the question of the mutual relation of some of the groups of the Muridæ (*Hesperomys*, *Microtus*, *Murina*) and *Spalacidae* with each other and with the *Nesomyina* of Madagascar. The *Nesomyina* are the lowest of the Muridæ, being forerunners of the American *Hesperomys*, the Old-World *Murina*, and the *Microtus*. *Brachyuromys* bears close affinities to the *Spalacidae*, which are regarded as lowly-organized Muridæ.

*Leptomys*, n. g., for *L. elegans*, n. sp.; THOMAS, Ann. Mus. Genova (2), p. 610, Papua.

*Mus musculus jalapæ*, p. 198, *musculus brunneus*, p. 203, Mexico, ALLEN & CHAPMAN, Bull. Amer. Mus. xi; *damarensis*, DE WINTON, xix, p. 349, Damaraland; *sebastianus*, p. 463, Cameroons, *ugandæ*, xx, p. 317, *jacksoni*, p. 318, Uganda, *thomasi*, p. 321, Angola, Ann. Nat. Hist. (6); *peregrinus*, P. Zool. Soc. London, 1897, p. 959, Morocco; *latouchi*, THOMAS, Ann. Nat. Hist. (6) xx, p. 114, Fokien, China; *nyikæ*, P. Zool. Soc. London, 1897, p. 431, Nyasaland; *gestroi*, Ann. Mus. Genova (2) xviii, p. 611, Papua: n. spp. *M. exulans*, note on, WAITE, Mem. Austral. Mus. iii, p. 165; *arboricola* [= *ruttus*, THOMAS t. c. p. 860], habits, P. Zool. Soc. London, 1897, p. 857.

*Nesocia bacheri*, n. sp., NEHRING, Zool. Anz. xx, p. 503, Palestine.

*Malacomys centralis*, n. sp., DE WINTON, Ann. Nat. Hist. (6) xix, p. 465, Monbattu.

*Saccostomus elegans*, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 431, Nyasaland.

*Arvicanthis spekei*, n. sp., DE WINTON, Ann. Nat. Hist. (6) xx, p. 318, Uganda.

*Pogonomys*, Milne-Edwards, 1877 = *Chiruromys*, Thomas, 1888; THOMAS, Ann. Mus. Genova (2) xviii, p. 613. *P. lorix*, p. 613, *lepidus*, p. 614, *lamia*, p. 615, n. spp., THOMAS, t. c. Papua.

*Uromys levipes*, n. sp., THOMAS, t. c. p. 617, Papua.

*Peromyscus sitkensis*, Sitka I., Alaska, MERRIAM, P. Soc. Washington, xi, p. 223; *yucatanensis*, ALLEN & CHAPMAN, p. 8, Yucatan, *fulvus*, p. 201, Mexico, *melanotis*, p. 202, Vera Cruz, *spicilegus*, ALLEN, p. 50, *banderanus*, p. 51, Mexico, Bull. Amer. Mus. ix; *saturatus*, BANGS, Amer. Natural. xxxi, p. 75, British Columbia; *tiburonensis*, MEARNs, p. 720, Tiburon I., Gulf of California, *stephensi*, p. 721, San Diego, California, P. U. S. Mus. xix: n. spp.

*Microtus bairdi*, p. 74, Oregon, *serpens*, p. 75, British Columbia, *sitkensis*, p. 221, Sitka, Alaska, *kadiacensis*, Kadiak I., Alaska, *unalascensis*, p. 222, Unalaska, MERRIAM, P. Soc. Washington, xi; *canicaudus*, p. 67, Oregon, *aitchisoni*, p. 141, Gulmarg, Kashmir, MILLER, t. c.; *pennsylvanicus acadicus*, BANGS, Amer. Natural. xxxi, p. 239, Nova Scotia: n. spp. & subspp.

*Fiber macrodon*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 143, Virginia.

*Nectomys grandis*, xix, p. 498, Colombia, *magdalena*, p. 499, Magdalena River, *fulvius*, p. 499, Quito, *saturatus*, xx, p. 546, Ecuador, *russulus*, p. 557, Colombia, n. spp., THOMAS, Ann. Nat. Hist. (6).

*Holochilus nanus*, n. sp., THOMAS, op. cit. xix, p. 495, Marajo I., Amazon.

*Sigmodon boruæ*, p. 40, Costa Rica, *peruanus*, p. 118, Peru, *bogotensis*, p. 121, Bogota, *maecotensis*, p. 54, *colimæ*, p. 55, Mexico, J. A. ALLEN, Bull. Amer. Mus. ix; *hispidus pallidus*, Texas, *h. eremicus*, Sonora, Mexico, MEARNs, P. U. S. Mus. xx, p. 505: n. spp. & subspp.

- Rhithrodontomys mexicanus gracilis*, p. 9, Mexico, *rufescens*, p. 199, Mexico, *saturatus*, p. 201, Vera Cruz, n. spp. & subspp., ALLEN & CHAPMAN, Bull. Amer. Mus. ix.
- Oryzomys delicatus*, ALLEN & CHAPMAN, p. 19, Trinidad, *chrysomelas, jalapæ*, p. 206, Mexico, ALLEN, p. 37, Costa Rica, *mexicanus*, p. 52, *bulleri*, p. 53, Mexico, *baroni*, p. 117, Peru, Bull. Amer. Mus. ix
- goeldii*, xix, p. 494, Lower Amazonia, *peninsulae*, xx, p. 549, Lower California, THOMAS, Ann. Nat. Hist. (6).
- Zygodontomys*, n. g., for *Oryzomys cherriei*, Allen, 1895; ALLEN, Bull. Amer. Mus. ix, p. 38.
- Sigmodontomys*, p. 38, n. g., for *S. alfari*, n. sp.; ALLEN, *t. c.*, Costa Rica.
- Chilomys*, n. g., for *Oryzomys instans*, Thomas, 1895; THOMAS, Ann. Nat. Hist. (6) xix, p. 501.
- Ichthyomys trichotis*, n. sp., THOMAS, *op. cit.* xx, p. 220, West Cundinamarca.
- Acodon urichi*, p. 19, *frustrator*, p. 20, Trinidad, ALLEN & CHAPMAN, Bull. Amer. Mus. ix; *fuscinus*, xix, p. 496, Marajo I., Amazon, *spagazzinii*, xx, p. 216, *albiventer*, p. 217, Argentina, *pulcherrimus*, p. 599, Peru, THOMAS, Ann. Nat. Hist. (6): n. spp.
- Oxymycterus lanosus*, n. sp., THOMAS, *op. cit.* xx, p. 218, Straits of Magellan.
- Neotoma attwateri*, xix, p. 721, Kerr County, Texas, *cumulator*, xx, p. 503, California, n. spp., MEARN, P. U. S. Mus.
- Nelsonia*, n. g., for *N. neotomodon*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 277, Mexico.
- Phenacomys*, synopsis of species, MILLER, *t. c.* p. 77; *preblei*, n. sp., MERRIAM, *t. c.* p. 45, Colorado.
- Evotomys mazama*, p. 71, *obscurus*, p. 72, Oregon, MERRIAM, *wrangeli*, p. 120, Wrangel I., Alaska, *gapperi loringi*, p. 125, North Dakota, *ungava*, p. 130, Ungava, *nivarius*, p. 136, Olympic Mountains, Washington, BAILEY, *proteus*, p. 137 (its variations, p. 239, pl. iv), Hamilton I., Labrador, BANGS, *t. c.*: n. spp. & subspp.
- Ellobius lutescens*, n. sp., THOMAS, Ann. Nat. Hist. xix, p. 308, Van.

## SPALACIDÆ and DIPODIDÆ.

- Intimate relationship of *Spalacidae* to the *Muridae*, structure of skull, and dentition; F. MAJOR, P. Zool. Soc. London, 1897, p. 695.
- Spalax giganteus*, p. 169, Caspian, †*priscus*, p. 174, Pliocene, Hungary, *kirsorum*, p. 176, Volga Steppes, *ehrenbergi*, p. 178, Palestine, *egyptius*, p. 180, Egypt, *intermedius*, p. 181, Syria, n. spp., NEHRING, SB. Ges. naturf. Berlin, 1897.
- Zapus tenellus*, p. 103, British Columbia, *pacificus, trinotatus montanus*, p. 104, Oregon, *hudsonius alascensis*, p. 223, Alaska, MERRIAM, P. Soc. Washington, xi, n. spp. & subspp.
- Alactaga williamsi*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 309, Van; *Alactagulus*, n. subg., for *Alactaga elater*, Licht., NEHRING, SB. Ges. naturf. Berlin, 1897, p. 154.

## GEOMYIDÆ, HETEROMYIDÆ, and BATHYERGIDÆ.

- General account of Pocket-Gophers: WEBSTER, Amer. Natural. xxxi, p. 114.
- Thomomys fulvus intermedius*, MEARN, P. U. S. Mus. xix, p. 719, Arizona, *nevadensis*, p. 213, Nevada, *angularis*, p. 214, California, *mazama*, p. 214, *quadratus*, p. 214, *leucodon*, p. 215, Oregon, *operarius*, p. 215, *alpinus*, p. 216, California, *nasicus*, p. 216, Oregon, n. spp. & subspp.

*Dipodomys mitchelli*, n. sp., MEARNs, t. c. p. 719, Tiburon I., Gulf of California.

*Heteromys gaumeri*, p. 9, Yucatan, J. A. ALLEN & CHAPMAN, *hispidus*, p. 56, Mexico, J. A. ALLEN, Bull. Amer. Mus. ix: n. spp.

*Georychus bocagei*, DE WINTON, Ann. Nat. Hist. (6) xx, p. 323, Hanha, Angola; *whytei*, THOMAS, P. Zool. Soc. London, 1897, p. 432, Nyasaland: n. spp.

### DASYPROCTIDÆ, CAVIIDÆ, and CHINCHILLIDÆ.

*Dasyprocta kalinowskii*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 219, Cuzco, Peru. Myology of *Dasyprocta* and *Dolichotis*; WINDLE, J. Anat. Physiol. norm. path. xxxi, p. 343.

Brain of *Cavia*; PONTI, Monit. Zool. ital. viii, p. 36.

*Vizaccia*, Schinz, 1824, supersedes *Lagostomus*, Brookes, 1829; PALMER, Science (2) vi, p. 21.

*Lagidium moreni*, n. sp., THOMAS, Ann. Nat. Hist. (6) xix, p. 469, Patagonia.

### ERETHIZONTIDÆ and OCTODONTIDÆ.

*Erethizon epixanthus couesi*, n. subsp., MEARNs, P. U. S. Mus. xix, p. 723, Arizona.

*Echimys gymnurus*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 550, Ecuador.

*Mesomys thomasi*, n. sp., IHERING, Revist. Mus. Paulista, ii, p. 171, I. of S. Sebastian; *M. ecaudatus*, note on, GOELDI, Bol. Mus. Para. ii, p. 253.

*Aulacodus calamophagus*, n. sp., POUSARGUES, Bull. Mus. Paris, 1897, p. 160, East Central Africa.

*Thryonomys sclateri*, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 432, Nyika, Nyasaland.

### †DIMYLIDÆ, †INCERTÆ SEDIS, and LEPORIDÆ.

†*Plesiodimylus*, n. g., for *R. chantrei*, n. sp.; GAILLARD, C.R. Ac. Paris, cxxiv, p. 1248, Miocene, Grive-St.-Alban.

†*Cephalomys*, n. g., for *C. arcidens* and *plexus*, n. spp.; AMEGHINO, Boll. Inst. Geogr. Argent. xviii, p. 90, fossil, Patagonia.

†*Asteromys*, n. g., for *A. punctus* and *prospicius*, n. spp.; AMEGHINO, t. c. p. 91, *ibid.*

†*Orchiomys*, n. g., for *O. prestans*, n. sp.; AMEGHINO, l. c. *ibid.*

*Lepus baileyi*, MERRIAM, P. Soc. Washington, xi, p. 147, Wyoming; *andinus*, p. 551, Ecuador, *cumanicus*, p. 552, Venezuela, THOMAS, Ann. Nat. Hist. (6) xx; *atlanticus*, DE WINTON, P. Zool. Soc. London, 1897, p. 960, Morocco: n. spp.

*Limnolagus*, n. n., for *Hydrolagus*, Gray, MEARNs, p. 393, Science, v.

## VI. UNGULATA.

### BOVIDÆ.

E. African Antelopes, notes on; JACKSON, P. Zool. Soc. London, 1897, p. 450. "The Book of Antelopes"; SCLATER & THOMAS, continued.

*Bos tprimigenius* and *bonasus*, old figures and descriptions; NEHRING, Globus, lxxi, No. 6; *tprimigenius* in Mecklenburg; GEINITZ, Arch. Ver. Mecklenb. l, p. 334; its existence during historic period; SCHIEMENZ, Biol. Centralbl. xvii, p. 793; *sondaicus*, characters of Burmese race; WOOD, Zoologist (4), i, p. 489.

- † *Bison alaskensis*, p. 490, Pleistocene, Alaska, *B. bison attrabascæ*, p. 498, N.-W. Territories, † *B. californicus*, p. 501, Pleistocene, California, n. spp. & subsp., RHOADS, P. Ac. Philad. † *B. antiquus*, osteology, STEWART, Kansas quart. vi, p. 127. † *B. priacus*, in Switzerland, KELLER, Mt. Ges. Luzern, 1895-96, p. 684.
- Ovis stonei*, J. A. ALLEN, Bull. Amer. Mus. ix, p. 111, British North-West America; *nelsoni*, MERRIAM, P. Soc. Washington, xi, p. 217, South California: n. sp.
- Capra mengesi*, Noack = *sinaitica*, SCLATER, P. Zool. Soc. London, 1897, p. 900, fig.; *ibex*, exterminated in Martinswand in 1540; KLAR, Zeitschr. Ferd. Tirol (3) xli, p. 302; horn of *ibex* in prehistoric deposits; STUDER, Mt. Ges. Bern, 1897, p. 283.
- Rupicapra vulgaris*, the remains found in the French Pliocene belong to the Pyrenean Izard; HARLÉ, Bull. Soc. geol. France (3) xxiv, p. 712.
- Bubalis neumanni*, n. sp., ROTHSCHILD, Ann. Nat. Hist. (6) xx, p. 376, Lake Rudolph.
- Cephalophus hecki*, n. sp., MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 158, Mozambique.
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## IX. MARSUPIALIA.

- WILSON & HILL, Quart. J. Micr. Soc. (2) xxxix, p. 427, from the study of *Perameles*, conclude that the so-called prelacteal dentition is really the milk series, and consequently that the anterior permanent series corresponds to that of other Mammals. They further suggest that Marsupials were originally placental, and that the pouch is a secondary feature. Hence the group is in no way ancestral to the *Eutheria*. Popular accounts of Australian Marsupials and Monotremes, KENT (135). Distinct coracoid in foetal Marsupial; BROOM, J. Anat. Physiol. norm. path. xxxi, p. 513. Notes on various species; BROOM, Tr. Soc. Glasgow (2) iv, p. 351. N. Australian species; COLLETT, P. Zool. Soc. London, 1897, p. 317. Development of enamel; TOMES, P. R. Soc. London, lxii, p. 28. Organ of Jacobson; BROOM, P. Linn. Soc. N. S. Wales, 1896, p. 591. Foot skeleton; EMERY, Denk. Ges. Jena, vi, Semon's Reise, ii, pt. v, p. 371. Placentation of *Perameles*; HILL, Quart. J. Micr. Sci. (2) xl, p. 385. Digestive system; OPPEL, Denk. Ges. Jena, v, Semon's Reise, ii, pt. v, p. 403. Brain; SMITH, Tr. Linn. Soc. London (2) vii, p. 47. Nervous system; ZIEHEN, Denk. Ges. Jena, vi, Semon's Reise, iii, pt. i.  
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†*Epanorthus*, n. g., for *E. chubutensis*, n. sp., AMEGHINO, t. c. p. 96, *ibid*.

†*Proborhyaena*, n. g., for *P. gigantea*, n. sp., AMEGHINO, *t. c.* p. 97, *ibid.*

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## III. AVES.

BY

R. BOWDLER SHARPE, LL.D., &amp;c.

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## INTRODUCTION.

SOME remarkable novelties have been discovered by Mr Everett and Mr Doherty in the Malay Archipelago, but otherwise there has been nothing of an extraordinary interest to mark the year 1897, which has rather been one of uniformly steady progress in every branch of ornithology. The discovery of the nesting-place of Ross's gull by Dr Nansen will also make the year 1897 noteworthy.

Special attention is now being given to the study of migration, both in Europe and America, and I must apologise to Mr Eagle Clarke for having overlooked his "Digest" in THE RECORD for last year. It is one of the most important papers ever published on the subject of migration.

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## III. SYSTEMATIC.

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## Order ARCHÆOPTERYGES.

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## Sub-class RATITÆ.

## Order STRUTHIONIFORMES.

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## Order DINORNITHIFORMES.

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## Order RALLIFORMES.

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*Porzana obscura*, n. sp., Masai Land; NEUMANN, Ornith. Monber. v, p. 191.  
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*Gallirex cristatus*, in Cutch; LISTER, J. Bombay Soc. xi, p. 321.  
*Tribonyx roberti*, n. sp. [fossil], Central Madagascar; ANDREWS, Ibis, 1897, pp. 356-358, pl. ix, figg. 4-7.  
*Porphyrio caeruleus*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.  
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## Order COLYMBIFORMES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, pp. 468 & 469, fig. 2.  
 The generic name of the Loons; ALLEN, Auk, xiv, p. 312.  
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*Colymbus glacialis* and *C. arcticus*, nesting in Shetland; APLIN, Zoologist, 1897, pp. 425 & 426.  
*C. arcticus*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.

## Order PODICIPEDIFORMES.

- Podiceps*: feathers in the stomach; BIEDERMANN, Ornith. Jahrb. viii, pp. 6-8.  
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- Pelagodroma marina*, on the West coast of Scotland; CLARKE, Ann. Scott. Nat. Hist. 1897, p. 88.
- Puffinus kuhli*, in Italy; ARRIGONI, Atti Soc. Ital. xxxvii, pp. 211-213.
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- Puffinus cinereus*, notes on; CAMPBELL, Victorian Natural. xiv, pp. 91 & 92.
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## Order ALCIFORMES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471, fig. 3.
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- Uria troile*, remarks on eggs; READ, Bull. Ornith. Club, vii, p. xix; *U. lomvia*, in Indiana; BUTLER, Auk, xiv, pp. 197-199; in South Carolina; COUES, t. c. p. 203: an addition to the Avifauna Columbiana; BARTSCH, Auk, xiv, pp. 312 & 313.
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- Cepphus snowi*, n. sp., Kuril Is.; STEJNEGER, Auk, xiv, pp. 200 & 201.

## Order LARIFORMES.

- The Terns of Penikese I., Massachusetts; MACKAY, Auk, xiv, pp. 278-284, 313 & 314, & 402.
- The Terns of Muskeget I., Massachusetts, pt. iii; MACKAY, t. c. pp. 383-390.
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- Onychoprion*, vice *Haliplana*; COUES, Auk, xiv, p. 314.
- Pseudosterna*, n. gen. [fossil], *P. dejener*, n. sp. (? Miocene), Patagonia; MERCERAT, An. Soc. Argent. xliii, pp. 237 & 238: *P. pampeana*, n. sp. (? Miocene), Patagonia; id. t. c. p. 238.
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- L. minutus*, on the West coast of Scotland; MACPHERSON, Ann. Scott. Nat. Hist. 1897, p. 125: in Germany, BAER, Ornith. Monber. v, p. 97.
- Pagophila alba*, note on; COUES, Auk, xiv, p. 313.
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## Order CHARADRIIFORMES.

### Sub-order CHARADRII.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, pp. 469 & 470.
- A list of the species of *Limicola* occurring in the State of Louisiana; MCILHENNY, Auk, xiv, pp. 288 & 289.
- Zur Herbstwanderung der nordischen Sumpfvögel über die Insel Öland; KOLTHOFF, Festschrift Lilljeborg, 1896, pp. 121-136, cum tab.
- Edicnemus edicnemus*, as observed around Thetford; CLARKE, Zoologist, 1897, pp. 248-250. *Edicnemus indicus*, in Southern Hungary; REICHENOW, J. Ornith. 1897, p. 83.
- Glareola pratincola* × *G. melanoptera*; VON SCHITCKOW, Zool. Anz. xx, pp. 132 & 133.
- Hydrophasianus chirurgus*, head and foot figured; MADARASZ, Termes. Füzetek, xx, tab. viii, fig. 3.
- Aarcia spinosa*, notes on the nomenclature; COUES, Auk, xiv, p. 88.
- Hæmatopus finschi*, n. sp., New Zealand; MARTENS, Ornith. Monber. v, pp. 190 & 191.
- Charadrius dominicus*, notes on the migration; MACKAY, Auk, xiv, pp. 212-214.
- Ægialitis hiaticula*, inland breeding in Norfolk and Suffolk; CLARKE, Zoologist, 1897, pp. 502-504.
- Ibidorhynchus struthersi*, nest described; CORDEAUX, Ibis, 1897, pp. 563 & 564.
- Numenius borealis*, notes on the migration in Massachusetts; MACKAY, Auk, xiv, pp. 212-214.
- Limosa*, notes on the species; E. A. S. ELLIOT, Ibis, 1897, pp. 564-574.
- L. limosa*, in Queen's county; USSHER, Irish Natural. vi, p. 28.
- Calidris arenaria*, notes on the annual moult; STONE, P. Ac. Philad. 1897, pp. 368-372.
- Totanus fuscus*, on the Solway Firth; MACPHERSON, Ann. Scott. Nat. Hist. 1897, pp. 219-222.
- T. glareola*, nesting in old nests of *Turdus pilaris*; POPHAM, Ibis, 1897, p. 94.
- Macrorhamphus griseus*, in Indiana; BUTLER, Auk, xiv, p. 199.
- T. bairdi*, in Indiana; BUTLER, t. c. p. 199.
- T. minutilla*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.
- T. canutus*, in Indiana; BUTLER, Auk, xiv, p. 199: its food; FEILDEN, Zoologist, 1897, pp. 232 & 233.
- T. subarquata*, egg figured; NEWTON, P. Zool. Soc. London, 1897, pl. li, figg. 1-4: in East Renfrewshire; PATERSON & ROBERTSON, Ann. Scott. Nat. Hist. 1897, pp. 124 & 125.
- Ancylochelidon subarquatus*, nesting on the Yenesei; POPHAM, Bull. Ornith. Club, vii, p. ii.
- Gallinago*, notes on species; DEICHLER, J. Ornith. 1897, pp. 142-154. *G. dubia*, n. sp., Japan; *id.* t. c. pp. 150-152.
- G. major*, near St Andrews; COOK, Ann. Scott. Nat. Hist. 1897, p. 45: in the Solway district; SERVICE, t. c. p. 124.
- Phalaropus fulicarius*, in the Solway district; SERVICE, t. c. p. 125.

## Sub-order OTIDES.

*Otis tarda*, an unrecorded Norfolk specimen; SOUTHWELL, Zoologist, 1897, p. 572.

## Order GRUIFORMES.

Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 469.

A monograph of the Cranes by F. E. BLAAUW, Leiden and London: 1897, folio, viii & 67 pp., xviii pls. The following species are figured:—*Grus communis*, pl. i; egg, pl. xvii, fig. 1; *G. nigricollis*, pl. ii; *G. japonensis*, pl. iii; egg, pl. xvii, fig. 2; *G. monachus*, pl. iv; *G. americana*, pl. v; egg, pl. xvii, fig. 3; *G. canadensis*, pl. vi; egg, pl. xvii, fig. 4; *G. collaris*, pls. vii & vii a; *G. antigone*, pl. viii; egg, pl. xvii, fig. 5; *G. australasiana*, pl. ix; egg, pl. xviii, fig. 6. *Anthropoides virgo*, pls. x & x a; egg, pl. xviii, fig. 1; *A. paradisea*, pls. xi & xi a; egg, pl. xviii, fig. 2; *A. carunculata*, pl. xii; egg, pl. xviii, fig. 3; *A. leucauchen*, pl. xiii; egg, pl. xviii, fig. 4; *A. leucogeranus*, pl. xiv; egg, pl. xviii, fig. 5. *Balearica pavonina*, pls. xv & xv a; *B. regulorum*, pl. xvi; egg, pl. xviii, fig. 2.

## Sub-order DICHOLOPHI.

*Cariama cristata*, breeding in the Zoological Gardens; SCLATER, P. Zool. Soc. London, 1897, pp. 813 & 814.

## Order STEREORNITHIFORMES.

*Staphylornis*, n. g. [fossil], type *S. gallardoi*, n. sp. (? Miocene), Patagonia; MERCERAT, An. Soc. Argent. xliii, pp. 233–235. *S. erithacus*, n. sp. (? Miocene), Patagonia; *id. t. c.* p. 235.

## Order ARDEIFORMES.

Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London 1897, p. 469.

*Corvus eremita*, Linn. = *Comatibis comata* (Rüppell); ROTHSCHILD, HARTERT, & KLEINSCHMIDT, Nov. Zool. iv, pp. 371–375: figured; *iid. t. c.* pls. viii–x.

*Lampribis rara*, nomen emend. pro *L. olivacea*, auct. (nec Du Bus); *iid. t. c.* p. 377.

*Plegadis falcinellus*, near Eberswalde; ALTUM, Ornith. Monber. v, pp. 19 & 20.

*Ardea purpurea*, notes on the breeding habits; WHITLOCK, Zoologist, 1897, pp. 407–409.

*Nycticorax nycticorax*, in Barra; PEEL, Ann. Scott. Nat. Hist. 1897, p. 43.

*Ardea virescens*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.

*Ardetta neoxena*, remarks on; ROTHSCHILD, Bull. Ornith. Club, vi, p. liii.

*Ardea ralloides*, in Orkney; BRIGGS, Ann. Scott. Nat. Hist. 1897, p. 158.

## Order ANSERIFORMES.

## Sub-order PHENICOPTERI.

*Phenicopterus roseus* and *P. minor*, notes on; STUART BAKER, J. Bombay Soc. xi, pp. 2–8.

## Sub-order ANSERES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, pp. 466 & 467, fig. 1.
- Experimental infection of Ducks; ROSSETER, J. Quekett Club (2) vi, No. 41, pp. 397-405, pl. xviii.
- A list of the species of *Anseres* occurring in the State of Louisiana; MCILHENNY, Auk, xiv, pp. 285-287.
- Notes on certain species of New Zealand Ducks; SMITH, Tr. N. Zealand Inst. xxix, pp. 252-256.
- Cygnus olor*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv. *C. musicus*, in Nepal (not *C. bewicki*); BLANFORD, J. Bombay Soc. xi, p. 306.
- C. olor* and *C. minor*, heads figured; STUART BAKER, t. c. pl. i. *C. musicus*, *C. bewicki*, and *C. olor*, notes on; *id.* t. c. pp. 11-21. *C. atratus*, incubation by the male; MILNE-EDWARDS, Bull. Mus. Paris, 1897, pp. 165 & 166.
- Anser neglectus*, notes on; SUSHKIN, Ibis, 1897, pp. 5-8, pl. ii. *A. albifrons*, figured; STUART BAKER, J. Bombay Soc. xi, pl. ii. *A. segetum*, pictures on the tombs of Egypt; BARRETT-HAMILTON, Ibis, 1897, pp. 484-486.
- Chenalopex sirabensis*, n. sp. [fossil], Central Madagascar; ANDREWS, t. c. p. 355, pl. ix, figg. 1-3.
- Bernicla brenta*, in the Clyde area; PATERSON, Ann. Scott. Nat. Hist. 1897, pp. 252-254.
- Branta bernicla glaucogastra*, notes on; COUES, Auk, xiv, pp. 207 & 208.
- B. canadensis occidentalis*, nesting in Okanogan Co., Washington; DAWSON, t. c. pp. 87 & 88.
- Centornis*, n. g. [fossil], type *C. majori*, n. sp., Central Madagascar; ANDREWS, Ibis, 1897, pp. 343-355, pl. viii.
- Nettapus coromandelianus*, notes on; STUART BAKER, J. Bombay Soc. xi, pp. 191-198.
- Thalassornis insularis*, n. sp., Madagascar; RICHMOND, P. U. S. Mus. xix, p. 678.
- Sarcidiornis melanonota*, notes on the nesting habits; STUART BAKER, J. Bombay Soc. xi, pp. 172-180.
- Rhodonessa caryophyllacea*, notes on; STUART BAKER, t. c. pp. 185-191.
- Anas boscas*, var.; ARRIGONI, Atti Soc. Ital. xxxvii, pp. 208-210. *A. chlorotis*, figured; BULLER, Tr. N. Zealand Inst. xxix, pl. xi. *A. sponsa*, near Vienna; LORENZ, Ornith. Jahrb. viii, pp. 149 & 150. *A. carolinensis*, *A. discors*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.
- Dasylula*, n. subg., type *D. eatoni*; COUES, Auk, xiv, p. 207.
- Dendrocygna eytoni*, nest and eggs described; NORTH, P. Linn. Soc. N. S. Wales, xxii, pp. 60 & 61.
- Asarcornis scutulata*, notes on; STUART BAKER, J. Bombay Soc. xi, pp. 181-185.
- Salvadorina waiguiensis*, male, female, young, and eggs described; DE VIS, Ibis, 1897, pp. 391 & 392.
- Fuligula cristata*, in the upper reaches of the valley of the Ayr; FAIRBAIRN, Ann. Scott. Nat. Hist. 1897, p. 152; in Solway; SERVICE, t. c. pp. 222-224.
- Somateria dresseri*, notes on the plumage; NORTON, Auk, xiv, pp. 303 & 304.

## Order PELECANIFORMES.

Rectrices of Cormorants; COUES, Auk, xiv, p. 316.

The nostrils in young Cormorants; LUCAS, t. c. p. 87; ANTHONY, t. c. p. 205.

- Plotus melanogaster*, notes on; head and feet figured; MADARASZ, Termes. Fuzetek, xx, pp. 391 & 392, Tab. ix, figg. a-d. *P. nanus* [fossil] humerus figured; ANDREWS, Ibis, 1897, pl. ix, fig. 8.
- Fregata*, skull figured; BEDDARD, P. Zool. Soc. London, 1897, p. 293, fig. 4. *F. aquila*, in Indiana; BUTLER, Auk, xiv, p. 200.
- Dysporus serratator*, note on the nesting habits; BULLER, Tr. N. Zealand Inst. xxix, pp. 198-200.
- Phaethon*, notes upon the anatomy; BEDDARD, P. Zool. Soc. London, 1897, pp. 288-294, figg. 1-3. *P. flavo-aurantius*, from Christmas Island, *P. americanus*, n. sp., Bermudas, OGILVIE-GRANT, Bull. Ornith. Club, vii, p. xxiv.

## Order ACCIPITRIFORMES.

See SALVIN, O. & GODMAN, F. D. (459).

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 470.
- Circus pygargus*, breeding in Ireland; TEESDALE, Irish Natural. vi, p. 284 [is *C. cyaneus*]: *C. cineraceus*, nesting in Kent; HAMMOND, Zoologist, 1897, p. 363. *C. pallidus*, breeding near Brunswick; BLASIUS, J. Ornith. 1897, p. 510. *C. macrurus*, in Upper Silesia, Kollibay, Ornith. Monber. v, p. 180. *C. sp. incog.*, British New Guinea; DE VIS, Ibis, 1897, pp. 373 & 374.
- Melierax poliopterus somaliensis*, n. subsp., West Somaliland; NEUMANN, Ornith. Monber. v, p. 192. [= *M. poliopterus*.]
- Micrastur ruficollis*, young male described; SALVADORI, Boll. Mus. Torino, xii, No. 292, p. 29.
- Astur maculosus*, n. sp., Victoria; COLES, Victorian Natural. xiv, pp. 43 & 44.
- Accipiter nisus puniceus*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 187. *A. erythrauchen*, young male described; DE VIS, Ibis, 1897, pp. 372 & 373. *A. atricapillus*, breeding in Pennsylvania; STONE, Auk, xiv, pp. 317 & 318.
- Buteo ferox*, in Lower Austria; REICHENOW, Ornith. Monber. v, p. 128. *B. borealis harlani*, in Indiana; BUTLER, Auk, xiv, p. 200.
- Aquila pomarina*, nom. emend. pro *A. pomarina*, Brehm; ALBARDA, J. Ornith. 1897, p. 171.
- Spizaetus ceylonensis*, notes on; MADARASZ, Termes. Fuzetek, xx, pp. 323 & 324, fig. 1.
- Circus gallicus*, life habits; CZYNYK, Aquila, iv, pp. 254-259.
- Spilornis melanotis*, head figured; MADARASZ, Termes. Fuzetek, xx, Tab. vii, fig. 2.
- Pithecophaga jefferyi*, figured; OGILVIE-GRANT, Ibis, 1897, pl. v, and with figg. 1-4 in text.
- Haliaeetus leucocephalus alascanus*, n. subsp., Alaska; TOWNSEND, P. Soc. Washington, xi, pp. 145 & 146. *H. albicilla*, in Wiltshire; MORRIES, Natural. J. vi, No. 59, p. 73.
- Milvus korschun desertorum*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 192. *M. migrans*, nesting; ARRIGONI, Atti Inst. Veneto, lvi, pp. 93-106.
- Elanus leucurus*, nesting; BARLOW, Auk, xiv, pp. 14-21.
- Microrhax meridionalis*, n. sp., Mindanao; OGILVIE-GRANT, Ibis, 1897, pp. 220-222.
- Falco gyrfalco* and its allies, notes on; KLEINSCHMIDT, J. Ornith. 1897, pp. 514-517. *F. saker*, in Italy; MARTORELLI, Avicula, i, pp. 33 & 34; Atti Soc. Ital. xxxvi, pp. 199-202. *F. communis*, male incubating; STEWART, Ann. Scott. Nat. Hist. 1897, p. 43. *F. aesalon*, nesting in a tree in Midlothian; GODFREY, t. c. pp. 251 & 252. *F. feldeggii*, in Italy; ARRIGONI, Avicula, i, pp. 157-159: figured; CSÜRGÉY, Aquila, iv, taf. i.



- Cerchneis fieldi*, n. sp., Somaliland; ELLIOT, Field Columb. Mus., Ornith. i, No. 2, p. 58.  
*Tinnunculus tinnunculus*, plumage of the female; APLIN, Natural. J. vi, No. 56, pp. 35 & 36, cum fig.  
*Pandion haliaëtus*, in Inverness-shire; BUCKLEY, Ann. Scott. Nat. Hist. 1897, p. 43.  
*Polioaëtus ichthyaëtus*, notes on; head figured; MADARASZ, Termes. Fuzetek, xx, pp. 327 & 328, Tab. vii, fig. 1.

## Order STRIGIFORMES.

- Owls and their longevity; GRABHAM, Naturalist, 1897, pp. 129-132.  
 See SALVIN, O. & GODMAN, F. D. (459).  
*Bubo ascalaphus barbarus*, *B. ascalaphus desertorum*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 192. *B. bubo*, in the Sudeten Mountains; RZEHA, t. c. pp. 43 & 44. *B. virginianus pallescens*, n. subsp., Texas; STONE, Amer. Natural. xxxi, p. 236.  
*Scops ingens*, n. sp., Ecuador; SALVIN, Bull. Ornith. Club, vi, p. xxxvii.  
*S. sancta-catarinae*, n. sp., Santa Catarina, Brazil; *id. t. c.* pp. xxxvii & xxxviii. *S. roraimae*, n. sp., Roraima, British Guiana; *id. t. c.* p. xxxviii. *S. trichopsis*, figured; SALVIN & GODMAN, Biol. Centr. Amer. Aves, iii, pt. cxxxviii, pl. 62.  
*Pisorhina alfredi*, n. sp., South Flores; HARTERT, Nov. Zool. iv, pp. 527 & 528.  
*Megascops asio*; CHADBOURNE, Auk, xiv, pp. 33-39, pl. i.  
*M. marmoratus*, n. sp., Mexico; NELSON, Auk, xiv, p. 49.  
*Ninox everetti*, n. sp., Siassi I., Sulu Archipelago; SHARPE, Bull. Ornith. Club, vi, p. xlvii.  
*Athene noctua*, in Yorkshire; BACKHOUSE, Naturalist, 1897, p. 76.  
*Glaucidium cuculoides* and *G. brodiei*, nesting; STUART BAKER, J. Bombay Soc. xi, pp. 227-232.  
*Nyctea scandiaca*, in Sutherland; BUCKLEY, Ann. Scott. Nat. Hist. 1897, p. 43. *N. nivea*, fossil, in Italy; REGALIA, Avicula, i, pp. 30 & 31.  
*Syrnium nigricantius*, n. sp., Mpapwa, Central East Africa; SHARPE, Bull. Ornith. Club, vi, p. xlvii. *S. fulvescens*, figured; SALVIN & GODMAN, Biol. Centr. Amer. Aves, iii, pt. cxxxviii, pl. 61. *S. uralense*, notes on; CZYNK, Aquila, iv, pp. 150-155.  
*Strix flammea sumbaensis*, n. sp., Island of Sumba; HARTERT, Nov. Zool. iv, p. 270. *S. pratincola*, notes on, in Eastern Pennsylvania; REED, Auk, xiv, pp. 374-383.

## Order CORACIIFORMES.

## Sub-order PODARGI.

- HARTERT, Das Tierreich, Liefer. i, pp. 1-13.  
*Podargus phalaenoides*, eggs described; LE SOUEF, Ibis, 1897, p. 393.  
*Batrachostomus hodgsoni*, nest and eggs; STUART BAKER, J. Bombay Soc. x, pp. 553-555.

## Sub-order CORACIÆ.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

## Sub-order MEROPES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

- Merops apiaster*, in Caithness ; DUNBAR, Ann. Scott. Nat. Hist. 1897, p. 250.  
*Melittophagus quinticolor*, notes ; STUART BAKER, J. Bombay Soc. x, pp. 560-563.  
*Nyctiornis athertoni*, nesting habits ; STUART BAKER, *l. c.* pp. 558-560.

## Sub-order HALCYONES.

- Intercentra in the vertebral column ; BEDDARD, P. Zool. Soc. London, 1897, p. 471.  
*Alcedo grandis*, figured ; STUART BAKER, J. Bombay Soc. x, pl. g.  
*Ceryle rudis*, notes on ; STUART BAKER, *l. c.* pp. 540-542.  
*Pelargopsis susak*, n. subsp., Lombok ; VORDERMAN, Natuurk. Tijdschr. Nederl. Ind. liv, pp. 334 & 335.  
*Halcyon quadricolor*, from German New Guinea ; BERLEPSCH, J. Ornith. 1897, p. 90.  
*Cyanalcyon elizabeth*, from German New Guinea ; BERLEPSCH, *l. c.* p. 90.  
*Monachalcyon monachus intermedius*, n. subsp., West Celebes, HARTERT, Nov. Zool. iv, pp. 163 & 164. *M. capucinus*, note on the female ; *id.* *l. c.* p. 160.  
*Dacelo cervina*, eggs described ; LE SOUËF, Ibis, 1897, pp. 392 & 393.

## Sub-order BUCEROTES.

- Intercentra in the vertebral column ; BEDDARD, P. Zool. Soc. London, 1897, p. 472, fig. 4.  
*Bucorax guineensis* and *B. abyssinicus*, casques figured ; REICHENOW, J. Ornith. 1897, p. 19.  
*Rhytidoceros everetti*, n. sp., Sumba ; ROTHSCCHILD, J. Ornith. 1897, p. 513.  
*Ocyrceros gingalensis*, head figured ; MADARASZ, Termes. Fuzetek, xx, Tab. viii, fig. 1.  
*Dichoceros bicornis*, in captivity ; PHIPSON, J. Bombay Soc. xi, pp. 307 & 308, pls. A & B (photographic) : in the wild state ; BINGHAM, *l. c.* pp. 308-310.  
*Anorrhinus austeni*, notes on ; STUART BAKER, J. Bombay Soc. x, pp. 564 & 565.  
*Tockus melanoleucus*, nesting habits ; SCHÖNLAND, Tr. S. African Soc. x, pp. 1-7.

## Sub-order UPUPÆ.

- Intercentra in the vertebral column ; BEDDARD, P. Zool. Soc. London, 1897, p. 471.  
*Upupa epops*, notes on ; SALVADORI, Ibis, 1897, p. 494.

## Sub-order MOMOTI.

- Intercentra in the vertebral column ; BEDDARD, P. Zool. Soc. London, 1897, p. 471.  
*Momotus mexicanus saturatus*, n. subsp., Mexico ; NELSON, Auk, xiv, pp. 49 & 50.

## Sub-order CAPRIMULGI.

HARTERT, Das Tierreich, Liefer. i, pp. 14-61.

*Caprimulgus*, sp. incog., Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, pp. 77.

*Antrostomus ridgwayi*, n. sp., Mexico; NELSON, Auk, xiv, pp. 50 & 51.

## Sub-order CYPSELI.

On the family name for the Swifts; REICHENOW, Ornith. Monber. v, pp. 9, 10, & 26-28; cf. Ibis, 1897, pp. 290 & 291.

"*Macropterygidae*" (vice "*Cypselidae*"); HARTERT, Das Tierreich, Liefer. i, pp. 62-81.

*Apus* (vice *Cypselus*); HARTERT, t. c. p. 83.

*Cypselus apus*, its early arrival; NEWTON, Nature, iv, p. 508. *C. melba*, its distribution in Switzerland in summer; GURNEY, Tr. Norfolk Soc. vi, p. 258, with map.

*Chaetura pelagica*, note on the nesting habits; COUES, Auk, pp. 217 & 218.

*C. indica*, notes on; STUART BAKER, J. Bombay Soc. x, pp. 547-550.

*Panyptila cayennensis*, nest and eggs; SCLATER, Bull. Ornith. Club, vi, pp. xxvii & xxviii.

*Macropteryx comata*, from the Philippines, = *Macropteryx comata major*, Hart.; HARTERT, Nov. Zool. iv, p. 11.

## Sub-order TROCHILI.

Catalogue des espèces actuellement connues de la famille de Trochilides.

E. SIMON, Paris: 1897, 8vo, 46 pp.

Remarks on West Indian Humming-birds; SALVIN, Ibis, 1897, pp. 139 & 140.

Notes on *Trochilidae* in Northern Peru; BARON, Nov. Zool. iv, pp. 1-10.

Notes on Humming-birds; HARTERT, t. c. pp. 148-152.

*Aglaeactis aliciae*, figured; BARON, t. c. pl. i, figg. 1 & 2.

*Glaucois hirsuta*, notes on; HARTERT, Ibis, 1897, p. 423.

*Panychlora* = *Chlorostilbon*; HARTERT, Nov. Zool. iv, p. 150: notes on; id. t. c. pp. 150 & 151.

*Thalurania chlorophana*, n. sp., Bahia; SIMON, Cat. Trochilides, p. 20.

*T. valenciana*, Boucard = *T. columbica*; HARTERT, Nov. Zool. iv, p. 149.

*T. boliviana*, Boucard = *T. jelskii*, Tacz., id. t. c. p. 149.

*Chrysolanpis chlorolaemus*, from Bahia; BERLEPSCH, Bull. Ornith. Club, vii, p. iii.

*Diphlogæna eva*, n. sp., E. Peru; SALVIN, op. cit. vi, p. xxx. Note on the habits; BARON, Nov. Zool. iv, p. 5.

*Helianthea traviesi*, notes on; HARTERT, t. c. p. 530.

*Cyanoleobia kingi*, notes on; HARTERT, t. c. p. 529.

*Metallura malaga*, n. sp., East Bolivia; BERLEPSCH, J. Ornith. 1897, p. 90.

*Heliangelus dubius*, n. sp., Bogota; HARTERT, Nov. Zool. iv, p. 532.

*Chrysobronchus thaumantias andinus*, n. subsp., Colombia; SIMON, Cat. Trochilides, p. 24.

*Polyerata reini*, n. sp., W. Ecuador; BERLEPSCH, Ornith. Monber. v, pp. 58 & 59.

*Phaethornis mexicanus*, n. sp., Chilpancingo, Mexico; HARTERT, Ibis, 1897, pp. 425 & 426. *P. baroni*, n. sp., W. Ecuador; id. t. c. pp. 426 & 427. *P. mularis*, remarks; HARTERT, Nov. Zool. iv, p. 529.

*P. stuarti*, n. sp., E. Bolivia; HARTERT, Bull. Ornith. Club, vi, pp. xxxix & xl.

*Pampa lessoni*, n. sp., Guatemala; SIMON, Cat. Trochilides, p. 8.

*Eupetomena nacrura prasina*, n. subsp., Brazil; SIMON, t. c. p. 9.

*Delattria pringlei*, n. sp., Mexico; NELSON, Auk, xiv, p. 51.

*Oreotrochilus stolzmanni*, notes on the nesting place; BARON, Nov. Zool. iv, pp. 3-5.

*Patagona gigas*, nesting; BARON, t. c. p. 3.

*Loddigesia mirabilis*, habits; BARON, t. c. p. 10.

*Eriocnemis catharina*, n. sp., E. Peru; SALVIN, Bull. Ornith. Club, vi, p. xxx.

*E. aurea*, Meyer, ? = *E. cupreiventris*, ♀; HARTERT, Nov. Zool. iv,

p. 148. *E. albigularis*, Boucard, = *E. cupreiventris*, var. *alb.*; *id.* t. c.

p. 148. *E. mosquera bogotensis*, n. subsp., Bogota; HARTERT, t. c.

p. 531. *E. berlepschi*, n. sp., Colombia; *id.* t. c. p. 531.

*Selasphorus platycercus*, in California; MCGREGOR, Auk, xiv, pp. 91 & 92.

*S. underwoodi*, n. sp., Costa Rica; SALVIN, Bull. Ornith. Club, vi, p. xxxviii.

*Myrmia micrura*, nesting; BARON, Nov. Zool. iv, p. 2.

*Thaumastura cora*, habits of; BARON, t. c. p. 7.

### Sub-order COLII.

Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

### Order COCCYGES.

#### Sub-order MUSOPHAGA.

*Turacus donaldsoni*, figured; DONALDSON SMITH (503) pl. to p. 94.

#### Sub-order CUCULI.

Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

*Cuculidae* of the A. O. U. List; their nomenclature; COUES, Auk, xiv, pp. 90 & 91.

*Cuculus canorus*, nesting habits: Halifax, Naturalist, ii, No. 9, pp. 57 & 58; MOSLEY, t. c. p. 79; WATERWORTH, t. c. pp. 79 & 80: in Shetland; GODFREY, Ann. Scott. Nat. Hist. 1897, pp. 250 & 251: sucking eggs; GURNEY, Zoologist, 1897, pp. 568-570: notes on; REY, J. Ornith. 1897, pp. 349-359: eggs in nests of *Sylvia hortensis*; TRESKOW, Ornith. Monber. v, pp. 161 & 162. *C. pallidus*, nesting habits; CAMPBELL, Victorian Natural. xiv, pp. 58-62: *C. flabelliformis*, notes, *id.* t. c. pp. 101-104.

*Cacomantis insperatus*, parasitic on *Herminia corinna*; DAHL, Ornith. Monber. v, pp. 78 & 79.

*Chrysococcyx cupreus*, parasitic on *Motacilla capensis*; NICHOLSON, Zoologist, 1897, pp. 142 & 143.

*Cercococcyx meadowi*, figured; REICHENOW, J. Ornith. 1897, taf. i, fig. 1.

*Centropus bengalensis*, in Ceylon; BUTLER, J. Bombay Soc. xi, p. 162.

*Rhopodytes viridirostris*, head figured; MADARASZ, Termes. Fuzetek, xx, Tab. viii, fig. 2.

### Order PSITTACIFORMES.

Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 470.

Myology of the tongue of Parrots; MUDGE, t. c. p. 815.

*Cacatua sulphurea djampeana*, n. subsp., Djampoa; HARTERT, Nov. Zool. iv, pp. 164 & 165.

*Calyptrorhynchus xanthonotus*, nidification; MORTON, P. R. Soc. Tasmania, 1896, p. 100.

- Trichoglossus forsteni djampeanus*, n. subsp., Djampea; HARTERT, Nov. Zool. iv, p. 172. *T. ornatus*, figured; SIMPSON, Avicult. Mag. iii, pl. to p. 81.
- Eos fuscata*, variation; MARTORELLI, Ibis, 1897, pp. 60-63.
- Psittuteles weberi* and *P. euteles*, remarks on; ROTHSCHILD, Bull. Ornith. Club, iv, p. liv.
- Eclectus cornelia*, from Sumba I.; ROTHSCHILD, t. c. vi, p. liii.
- Pæcephalus rubricapillus*, n. sp., West Africa; FORBES & ROBINSON, Bull. Liverpool Mus. i, p. 15.
- Cyanorhamphus magnirostris*, n. sp., Tahiti; *id.* t. c. p. 21.
- Neopsittacus viridiceps*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 371 & 372 [= *N. pullicauda*, Hartert; HARTERT, Nov. Zool. iv, p. 369].
- Cyclopsittacus macilwraithi*, n. sp., British New Guinea; ROTHSCHILD, Bull. Ornith. Club, vii, p. xxi.
- Pionopsitta pulchra*, n. sp., West Colombia; BERLEPSCH, Ornith. Monber. v, p. 175.
- Psittacella*, key to the species; HARTERT, Ibis, 1897, pp. 58-60. *P. picta*, figured; HARTERT, t. c. pl. iii.

## Order SCANSORES.

## Sub-order CAPITONES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
- Melanobucco abbotti*, n. sp., East Africa; RICHMOND, Auk, xiv, p. 164.
- Tricholæna blandi*, n. sp., Somaliland; LORT PHILLIPS, Bull. Ornith. Club, vi, p. xlvii.
- Stactolæma woodwardi* [and *S. olivacea*], figured; SHARPE, Ibis, 1897, pl. x.
- Barbatula jacksoni*, n. sp., Mau, British East Africa; SHARPE, Bull. Ornith. Club, vii, p. vii.
- Trachylæmus togoensis*, figured; REICHENOW, J. Ornith. 1897, taf. i, fig. 2.
- Capito hypoleucus*, n. sp., Antioquia; SALVIN, Bull. Ornith. Club, vii, p. xvi.

## Sub-order PICI.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
- Gecinulus levallanti kenigi*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 187.
- Gecinulus viridanus*, n. sp., N.W. Fohkien; SLATER, Ibis, 1897, p. 176.
- Melanerpes*, sp. inc. remarks on; DUBOIS, P. Zool. Soc. London, 1897, p. 783.
- Dendrocopus minor*, notes on the habits; DAVENPORT, Zoologist, 1897, pp. 470 & 471.
- Dryobates sanctorum*, n. sp., Mexico and Guatemala; NELSON, Auk, xiv, p. 50.
- D. pubescens*, notes on the nomenclature of the species; BREWSTER, t. c. pp. 80-82.
- Picus pipra*, in East Prussia; KLEINSCHMIDT, J. Ornith. 1897, p. 509.
- Lepocestes sinensis*, n. sp., Kuatun, N.W. Fohkien; RICKETT, Bull. Ornith. Club, vi, p. 1.
- Tiga borneonensis*, n. sp., Borneo; DUBOIS, P. Zool. Soc. London, 1897, pp. 782 & 783.

## Order PASSERIFORMES.

## Family CORVIDÆ.

- Corvus leptonyx*, in Sardinia; GIGLIOLI, *Avicula*, i, p. 4; SCHALOW, *Ornith. Monber.* v, p. 97. *C. tingitanus*, in Italy; *id. t. c.* pp. 4 & 5.
- Garrulus ænops*, n. sp., Morocco; WHITAKER, *Bull. Ornith. Club*, vii, p. xviii. *G. rufescens*, n. sp., E. Himalayas; REICHENOW, *Ornith. Monber.* v, p. 123.
- Nucifraga*, review of the genus; HARTERT, *Nov. Zool.* iv, pp. 137 & 138.
- N. caryocatactes japonicus*, n. subsp., Japan; HARTERT, *t. c.* p. 134.
- N. caryocatactes*, and allies; HARTERT, *Bull. Ornith. Club*, vi, pp. xxv, xxxi, & xxxii.
- Cyanocitta cristata*, food; BEAL, *Yearbook U. S. Dept. Agric.* 1896, pp. 197-206, fig. 40.
- Calocitta formosa azurea*, n. subsp., Mexico; NELSON, *Auk*, xiv, pp. 55 & 56.
- Cissolopha pulchra*, n. sp., Mexico; NELSON, *t. c.* pp. 56 & 57.
- Podoces pleskei*, n. sp., Eastern Persia; ZARUDNY, *Annuaire Mus. St. Petersb.* i, p. xii [transl. HARMS, *Ornith. Monber.* v, pp. 181-183].
- P. panderti*, egg; NEWTON, *P. Zool. Soc. London*, 1897, pl. li, fig. 10.

## Family PARADISEIDÆ.

- Monograph of the *Paradiseidæ*, or Birds of Paradise, and *Ptilonorhynchidæ* [q.v.], or Bower-birds. Pt. VII: by R. B. SHARPE. London: 1897, folio. The following species are figured:—*Craspedophora alberti*, *Seleucidæ nigricans*, *Macgregoria pulchra*, *Paradisea minor*, *Parotia carolæ*, *Pteridophora alberti*, *Loboparadisea sericea*.
- Ptilornis paradisea*, nest and egg; CAMPBELL, *Victorian Natural.* xiii, p. 145, cum fig.
- Epimachus astrapioides*, n. sp., Dutch New Guinea; ROTHSCILD, *Bull. Ornith. Club*, vii, p. xxii.
- Craspedophora alberti*, eggs described and nest figured; LE SOUËF, *Ibis*, 1897, pp. 394-397, fig. 1.
- Paradisea minor jobiensis*, n. subsp., I. of Jobi; ROTHSCILD, *Bull. Ornith. Club*, vi, p. xlvi. Remarks on *P. minor* and *P. finschi*; *id. t. c.* pp. xlv & xlvi.
- P. intermedia*, from Collingwood Bay, British New Guinea; HARTERT, *Bull. Ornith. Club*, vii, p. iv: remarks on; ROTHSCILD, *op. cit.* vi, p. xl. *P. maria*, figured; REICHENOW, *J. Ornith.* 1897, taf. v. *P. albescens*, Musschenbr., an artefact; ROTHSCILD, *Bull. Ornith. Club*, vi, p. liv.
- Macgregoria*, n. g., type *M. pulchra*, n. sp., Mount Scratchley, British New Guinea; DE VIS, *Ibis*, 1897, p. 251, pl. vii.
- Maria*, GIGLIOLI, *Boll. Soc. geogr. Ital. Fasc. i*, 1897 (*nec* Bigot, 1859) = *Macgregoria*, DE VIS, *Ibis*, 1897, p. 251.
- Parotia helenæ*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, p. 390.
- P. berlepschi*, n. sp., Dutch New Guinea; KLEINSCHMIDT, *Ornith. Monber.* v, p. 46; *id.*, *J. Ornith.* 1897, pp. 174-178.
- Loria mariæ*, De Vis = *L. lorix*, Salvad.; ROTHSCILD, *Bull. Ornith. Club*, vi, pp. xxiv & xxv.
- Loboparadisea sericea*, figured; ROTHSCILD, *Nov. Zool.* iv, pl. ii, fig. 2.

## Family PTILONORHYNCHIDÆ.

- Monograph of the *Paradiseidæ* [q.v.], or Birds of Paradise, and *Ptilonorhynchidæ*, or Bower-birds. Pt. VII. By R. B. SHARPE. London: 1897, folio. *Æluredrus melanocephalus* figured.

- Chlamydodera lauterbacki*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 24: figured; *id.* J. Ornith. 1897, taf. vi.  
*Ælurædus subcaudalis*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 390 & 391.

### Family STURNIDÆ.

- Sturnus sophiæ*; BIANCHI [Transl. Härms], Ornith. Monber. v, pp. 165-169.  
*S. unicolor*, in Marocco, breeding plumage; WHITAKER, Bull. Ornith. Club, vii, p. xvii.  
*Sturnopastor floweri*, n. sp., Siani; SHARPE, *t. c.* p. xvii.  
*Pholidauges femoralis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 160 & 161.  
*Lamproternis brevicaudus*, n. sp., Elgeyu, British East Africa; SHARPE, Bull. Ornith. Club, vi, p. xlviii.  
*Amydrus ? dubius*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 158-160.

### Family PARAMYTHIDÆ.

- Paramythia montium*, remarks on the skeleton; SHARPE, Bull. Ornith. Club, vi, pp. xli & xlii.

### Family ORIOLIDÆ.

- Oriolus latior*, n. sp., Gaboon; SHARPE, Bull. Ornith. Club, vii, p. xvii.  
*O. galbula*, song; SEIDEL, Ornith. Monber. v, p. 124: BÜNGER, J. Ornith. 1897, pp. 172 & 173.

### Family ICTERIDÆ.

- Cassidix oryzivora*, Sel., notes on breeding; KUSCHEL, J. Ornith. 1897, pp. 168-170: parasitism; GOELDI, Ibis, 1897, pp. 290 & 361-364: nesting; LLOYD, Timehri (2) x, p. 37.  
*Cassicus persicus*, notes on nesting; GOELDI, Ibis, 1897, pp. 361-365.  
*Sturnella magna hoopesi*, n. subsp., Texas; STONE, P. Ac. Philad. 1897, pp. 149-152.  
*Dolychonyx orizivorus*, remarks on the spring plumage and "colour-change"; CHADBOURNE, Auk, xiv, pp. 137-149, pl. 1a, figg. 1-7; CHAPMAN, *t. c.* pp. 149-154.  
*Agelaius phæniceus grandis*, n. subsp., Mexico; NELSON, Auk, xiv, pp. 57 & 58. *A. p. richmondi*, n. subsp., Mexico; *id.* *t. c.* pp. 58 & 59. *A. gubernator californicus*, n. subsp., California; *id.* *t. c.* pp. 59 & 60.  
*Gymnomystax melanicterus*, notes on nesting; GOELDI, Ibis, 1897, pp. 365-368, fig. 1.

### Family PLOCEIDÆ.

- On changes of plumage in some of the typical Weaver-birds; BUTLER, Ibis, 1897, pp. 359-361.  
*Urobrachya nigrinotata*, n. sp., Witu, British East Africa; SHARPE, Bull. Ornith. Club, vii, p. vii.  
*Pyromelana wertheri*, n. sp., Wembere Steppes, East Africa; REICHENOW, Ornith. Monber. v, p. 160.  
*Emblema picta*, its distribution in New South Wales; NORTH, Rec. Austral. Mus. iii, p. 15.  
*Zonogastris melba affinis*, n. subsp., Somaliland; ELLIOT, Field Columb. Mus. Orn. i, No. 2, p. 34.

- Poephila mirabilis* and *P. gouldii*, figured; SAVILLE-KENT, Naturalist in Australia, p. 55, pl. ii.  
*Munia monticola*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 387 & 388. *M. subcastanea*, n. sp., West Celebes; HARTERT, Nov. Zool. iv, pp. 161 & 162. *M. brunneiceps*, note on; *id.* t. c. p. 11.  
*Estrela cyanocephala*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 157 & 158. *E. ochrogaster*, n. sp., Abyssinia; SALVADORI, Boll. Mus. Torino, xii, No. 287, p. 4.  
*Symplectes croconotus*, Sjöstedt, is the ♂ of *Sycobrotus insignis*, Sharpe; SHARPE, Bull. Ornith. Club, vi, p. xliii.  
*Mulimbus rubricollis*, from Uganda; SHARPE, t. c. p. xlviii.

## Family TANAGRIDÆ.

- Rhamphocelus inexpectatus*, n. sp., Panama; ROTHSCILD, Bull. Ornith. Club, vi, p. xxvii.  
*Phanicothraupis rubicoides affinis*, n. subsp., Mexico; NELSON, Auk, xiv, p. 66.  
*Pyrranga rubra*, the moult and certain plumage phases; SHUFELDT, t. c. pp. 406 & 407.  
*Buthraupis rothschildi*, n. sp., North-west Ecuador; BERLEPSCH, Bull. Ornith. Club, vii, p. iii.  
*Buarremon borelli*, n. sp., San Lorenzo; SALVADORI, Boll. Mus. Torino, xii, No. 292, p. 6.  
*Chlorospingus atriceps*, n. sp., Mexico; NELSON, Auk, xiv, p. 65.  
*Nemosia rosenbergi*, n. sp., North Ecuador; ROTHSCILD, Bull. Ornith. Club, vii, p. vi.  
*Saltator fulviventris*, female described; SALVADORI, Boll. Mus. Torino, xii, No. 292, p. 7.

## Family DREPANIDÆ.

- Himatione virens*, egg figured; NEWTON, P. Zool. Soc. London, 1897, pl. li, figs. 6 & 7.

## Family FRINGILLIDÆ.

- On sexual distinctions in Finches which are similarly coloured in both sexes; BUTLER, Avicult. Mag. iii, pp. 104–106, figs. 1–6.  
*Lobospingus*, n. g., type *L. sigillifer*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 389 & 390.  
*Oreospiza*, n. g., type *O. fuliginosa*, n. sp., British New Guinea; DE VIS, t. c. pp. 388 & 389.  
*Coccothraustes vespertinus mexicanus*, n. subsp., Mexico; CHAPMAN, Auk, xiv, p. 311.  
*C. humii*, in Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, p. 55.  
*Zamelodia vice Habia*; COUES, Auk, xiv, pp. 39–42.  
*Cardinalis cardinalis littoralis*, n. subsp., Mexico; NELSON, t. c. pp. 64 & 65.  
*Pyrrhuloxia sinuata texana*, n. subsp., Texas; RIDGWAY, t. c. p. 95.  
*Spinus tristis salicamans*, n. subsp., California; GRINNELL, t. c. pp. 397–399.  
*S. pinus*, spring moult; STONE, t. c. p. 320.  
*Montifringilla nivalis*, breeding in Siebenbürgen; GRUNAK, Aquila, iv, pp. 264–267.  
*Fringilla nivalis*, in Bohemia; KNÉZOUŘEK, Ornith. Jahrb. viii, pp. 108 & 109.



- Rhynchostruthus louisæ*, n. sp., Somaliland; LORT PHILLIPS, Bull. Ornith. Club, vi, p. xlvii.
- Rhodopechys aliena*, n. sp., Marocco; WHITAKER, *op. cit.* vii, p. xviii.
- Passer domesticus*, winter nest; BERGE, Ornith. Monber. v, pp. 109 & 110.
- P. griseigularis*, in Russia; BIANCHI [transl. M. Härms], *t. c.* pp. 162-165.
- Crithagra kilimensis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 155 & 156.
- C. striolata affinis*, n. subsp., East Africa; RICHMOND, *t. c.* pp. 156 & 157.
- Serinus whytii*, n. sp., Nyasaland; SHELLEY, Ibis, 1897, p. 528, pl. xi.
- S. canarius*, domestic races; HERRERA, Naturaleza (2) ii, pp. 489-491, pl. xxxi.
- Carpodacus*, remarks on the species of the genus in the Palearctic region; BIANCHI, Annuaire Mus. St. Petersb. 1897, pp. 218-240.
- C. macgregori*, n. sp., Lower California; ANTHONY, Auk, xiv, pp. 165 & 166.
- C. erythrurus*, in Holland; BLAAUW, Ibis, 1897, p. 289. *C. grandis*, in Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, p. 55.
- Pyrhospiza punicea humii*, in Ferghana; STOLZMANN, *t. c.* p. 55.
- Pinicola enucleator californica*, n. subsp., California; PRICE, Auk, xiv, pp. 182-186.
- P. enucleator*, notes and figure; BUTLER, Avicult. Mag. iii, pp. 1-5, cum tab.
- Corythus enucleator*, breeding in confinement; HOMEYER, J. Ornith. 1897, pp. 520-524.
- Emberiza schæniclus*, curious nest; WYATT, Bull. Ornith. Club, vii, p. vii.
- E. aureola*, song; VON HOMEYER, Ornith. Monber. v, p. 3. *E. rustica*, egg figured; NEWTON, P. Zool. Soc. London, 1897, pl. li, figg. 8 & 9.
- Calcarius lapponicus*, song; VON HOMEYER, Ornith. Monber. v, p. 2: in Franz Josef Land; F. G. JACKSON, Bull. Ornith. Club, vii, p. xiv.
- Idiopsar brachyurus*, from Bolivia; VON BERLEPSCH, *t. c.* p. iii.
- Pipilo clementæ*, n. sp., California; GRINNELL, Auk, xiv, pp. 289-294.
- Ammodramus savannarum obscurus*, n. subsp., Mexico; NELSON, *t. c.* p. 61.
- A. (Passerculus) sandwichensis wilsonianus*, for the Eastern Savannah Sparrow; COUES, *t. c.* pp. 92 & 93. *A. henslowi*, breeding at Plymouth, Michigan; PURDY, *t. c.* pp. 220 & 221. *A. caudacutus* and allies, notes; NORTON, P. Portl. Soc. Maine, ii, pp. 97-102.
- Peucaea ruficeps fusca*, n. subsp., Mexico; NELSON, Auk, xiv, pp. 62 & 63.
- P. r. australis*, n. subsp., Mexico; *id.* *t. c.* pp. 63 & 64.
- Junco*, synonymy. COUES, *t. c.* pp. 94 & 95. *J. mearnsi*, n. sp., Wyoming; RIDGWAY, *t. c.* p. 94. *J. fulvescens*, n. sp., Mexico; NELSON, *t. c.* pp. 61 & 62. *J. annectans* and *J. ridgwayi*, note on; RIDGWAY, *t. c.* p. 94.
- Spizella pusilla arenacea*, figured; RICHMOND, *t. c.* pp. 345-347, pl. iii.
- Sycalis flaveola*, note; BUTLER, Avicult. Mag. iii, pp. 127-129.
- Paroaria cucullata*, living for nearly thirty years in confinement; BERG, Ornith. Monber. v, p. 179.

### Family ALAUDIDÆ.

The Horned Larks of Maine; KNIGHT, Auk, xiv, pp. 371-374.

*Otocoris alpestris oaxacæ*, n. subsp.; NELSON, *t. c.* pp. 54 & 55.

*Spizocorys personata*, figured; DONALDSON SMITH, Through unknown African Countries, pl. to p. 126.

*Calendula fremantlii*, n. sp., Somaliland; LORT PHILLIPS, Bull. Ornith. Club, vi, p. xlvii.

- Mirafra horsfieldi*, figured; NORTH, Agric. Gaz. N.S.W. viii, pl. xiv, fig. 1.  
*M. collaris*, figured; DONALDSON SMITH, Through unknown African Countries, pl. to p. 126.  
*Galerida cristata deltae*, n. subsp., delta of the Nile; HARTERT, Nov. Zool. iv, p. 144. *G. c. superflua*, nomen emend. pro *G. c. pallida*, Whitaker (nec Brehm), Tunis; *id. t. c.* p. 144. *G. ellioti*, nomen emend. pro *G. pallida*, Elliot (nec Brehm, nec Whitaker), Somaliland; *id. t. c.* p. 144. *G. c. carolinæ*, n. subsp., Tunisian Sahara; ERLANGER, Ornith. Monber. v, p. 186.  
*G. pallida*, n. sp., Somaliland; ELLIOT, Field Columb. Mus. Ornith. i, No. 2, p. 38 (= *G. ellioti*, Hartert ut supra).  
*Ammomanes*, review of the genus, key to the species; HARTERT, Nov. Zool. iv, pp. 140 & 141. *A. akeleyi*, n. sp., Somaliland; ELLIOT, Field Columb. Mus. Ornith. i, No. 2, p. 39.  
*Lullula cherneli*, Prazak, not distinct from *L. arborea*; SHARPE, Bull. Ornith. Club, vi, pp. xlii & xliii.

## Family MOTACILLIDÆ.

- Motacilla melanope*, nesting in Lincolnshire; CORDEAUX, Zoologist, 1897, p. 274.  
*Anthus spinoletta*, in Carnarvonshire; CATON-HAIGH, *t. c.* p. 366. *A. australis*, figured; NORTH, Agric. Gaz. N.S.W. viii, pl. xiv, fig. 2 : curious nesting place; *id.*, Rec. Austral. Mus. iii, p. 15, pl. iv.

## Family MNIOTILTIDÆ.

- Dendroica goldmani*, n. sp., Guatemala; NELSON, Auk, xiv, pp. 66 & 67.  
*D. cærulescens cairnsi*, n. subsp., North Carolina; COUES, World's Congress on Ornithology, p. 138; Auk, xiv, pp. 96 & 97. *D. æstiva rubiginosa* (Pall.) subsp. restit., Alaska and British Columbia; OBERHOLSER, Auk, xiv, pp. 76-79.  
*Helminthophila bachmani*, breeding place; WIDMANN, Auk, xiv, pp. 305-310 : nest and eggs; RIDGWAY, *t. c.* pp. 309 & 310.  
*Compothlypis americana*, nesting in Cape May county, New Jersey; WILDE, Auk, xiv, pp. 289-294.  
*Basileuterus flavigaster*, n. sp., Mexico; NELSON, Auk, xiv, p. 67.

## Family CERTHIIDÆ.

- Certhia*: a review of the genus; HARTERT, Nov. Zool. iv, pp. 136-139.  
*C. familiaris japonicus*, n. subsp., Japan; *id. t. c.* p. 138. *C. familiaris*, and its allies; *id.* Bull. Ornith. Club, vi, pp. xxv & xxvi. *C. familiaris* and *C. brachydactyla*, notes on; FLOERJCKE, Ornith. Monber. v, p. 23.  
*C. brachydactyla*, in Germany; KLEINSCHMIDT, *t. c.* pp. 61 & 62.

## Family SITTIDÆ.

- Daphænositta*, n. g., type *D. miranda*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 380 & 381.  
*Sitta przewalskii*, described; DEDITIUS, J. Ornith. 1897, pp. 74 & 75.  
*S. magna*, male described and figured; RIPPON, Ibis, 1897, p. 3, pl. i.  
*S. canadensis*, breeding in Pennsylvania; STONE, Auk, xiv, p. 324.  
*Rhabdornis*, key to the species; OGILVIE GRANT, Ibis, 1897, p. 235.  
*R. inornatus*, figured; *id. t. c.* pl. vi, fig. 2.  
*Dendrophila lilacea*, n. sp., Samar; WHITEHEAD, Bull. Ornith. Club, vi, p. xlix.

## Family MELIPHAGIDÆ.

- Neneba*, n. g., type, *N. prasina*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 384.
- Ptilotis sibilibina*, *P. lacrimans*, *P. obscura*, n. spp., British New Guinea; DE VIS, t. c. pp. 381-383. *P. præcipua*, n. sp., New Guinea; HARTERT, Nov. Zool. iv, p. 370.
- P. lacrimans*, DE VIS = *P. salvadorii*, Hart.; HARTERT, t. c. p. 369.
- Acanthochera fusca*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 383 & 384 [Is a *Melirrhophetes*]; HARTERT, Nov. Zool. iv, p. 369.
- Meliornis schistaceu*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 381.
- Myzomela lufargei*, note on; HARTERT, Bull. Ornith. Club, vii, p. xxiii.

## Family NECTARINIIDÆ.

- Rhaphidornis*, n. gen., type *R. flavifrons*, n. sp.; REICHENOW, Ornith. Monber. v, p. 123.
- Cinnyris nectarinioides*, n. sp., East Africa; RICHMOND, Auk, xiv, p. 158.
- C. senegalensis lamperti*, n. subsp., Kilimanjaro; REICHENOW, J. Ornith. 1897, p. 196. *C. frenata meyeri*, n. subsp., N. Celebes; HARTERT, Nov. Zool. iv, p. 156. *C. frenata saleyerensis*, n. subsp., I. of Saleyer, Celebes; *id.* t. c. p. 156. *C. excellens*, Grant = *C. flammans* (Oust.); HARTERT, t. c. p. 11.

## Family DICEIDÆ.

- Dicaeum hosei*, n. sp., N. Celebes; SHARPE, Bull. Ornith. Club, vi, p. xlviii.
- D. neglectum*, n. sp., I. of Savu; HARTERT, Nov. Zool. iv, pp. 264 & 265.

## Family ZOSTEROPIDÆ.

- Zosterops cuicui* and *Z. læta*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 384 & 385. *Z. crassirostris*, *Z. superciliaris*, n. spp., South Flores; HARTERT, Nov. Zool. iv, p. 172. *Z. crassirostris*, figured; *id.* t. c. pl. iii, fig. 1. *Z. superciliaris*, figured; *id.* t. c. pl. iii, fig. 2. *Z. unica*, n. sp., Flores; *id.* t. c. p. 520.
- Lophozosterops* (? *Zosterops*) *subcristatus*, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 171. *L. dohertyi*, figured; ROTHSCCHILD, t. c. pl. ii, fig. 1.
- Tephros ruki*, n. sp., Ruk I., Carolines; HARTERT, Bull. Ornith. Club, vii, p. v.

## Family PARIDÆ.

- Die palæarktischen Sumpfsneisen. Beiträge zur Kenntnis derselben. KLEINSCHMIDT, Ornith. Jahrb. viii, pp. 45-103.
- Parus dejeani*, n. sp., Western China; OUSTALET, Bull. Mus. Paris, 1897, pp. 209 & 210. *P. owstoni*, redescribed; IJIMA, Döb. Zasshi, 1893, No. 62; REICHENOW, Ornith. Monber. v, p. 143. *P. meridionalis*, subsp. *P. salicarius*, Brehm, figured; *id.* t. c. taf. iii. *P. meridionalis* and *P. salicarius borealis*, figured; *id.* t. c. taf. iv. *P. sclateri*, nom. emend. pro *P. meridionalis*, ScL. [nec Liljeb.]; *id.* t. c. p. 133. *P. salicarius*, and its allies; KLEINSCHMIDT, J. Ornith. 1897, pp. 112-137: in England; HARTERT, Bull. Ornith. Club, vii, p. iv. *P. palustris*, in

- East Renfrewshire; PATERSON & ROBERTSON, Ann. Scott. Nat. Hist. 1897, pp. 124 & 125. *P. borealis* in Germany; KLEINSCHMIDT, Ornith. Monber. v, pp. 62 & 63: notes on; FLOERICKE, *t. c.* pp. 23 & 24. *P. cristatus* and its allied forms in Germany; KLEINSCHMIDT, *t. c.* pp. 1 & 2.
- Poecile hypermelaena*, *P. davidi*, described; DEDITIUS, J. Ornith. 1897, pp. 72-74.
- Auriparus flaviceps lamprocephalus*, n. subsp., Lower California; OBERHOLSER, Auk, xiv, pp. 391-394.
- Regulus calendula grinnelli*, n. subsp., Alaska; PALMER, Auk, xiv, pp. 399-401.

## Family LANIIDÆ.

- Lanius robustus*, Baird, status in North America; RIDGWAY, Auk, xiv, p. 323. *L. ludovicianus*, from Andros I., Bahamas; SHARPE, Bull. Ornith. Club, vii, p. vii. *L. collurio*, notes on; PRAZAK, Ornith. Monber. v, pp. 37-43.
- Otomela varia*, n. sp., Transcaspia; ZARUDNOI, Annuaire Mus. St. Petersb. ii, p. 194. [Transl. HÄRNIS, Ornith. Monber. v, pp. 183 & 184.]
- Nicator chloris*, from Uganda; SHARPE, Bull. Ornith. Club, vi, p. xlviii.
- Laniarius abbotti*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 161 & 162.
- Cracticus rufescens*, nest and eggs; NORTH, P. Linn. Soc. N.S.W. xxii, pp. 56-58.
- Pachycephala melanura dahl*, n. subsp.; REICHENOW, Ornith. Monber. v, pp. 178 & 179. *P. gamblei*, n. sp., British New Guinea; ROTHCHILD, Bull. Ornith. Club, vii, p. xxii. *P. sororcula*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 380. *P. nudigula*, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 171: figured; *id. t. c.* pl. iii, fig. 3.
- Abbotornis*, n. g., type *A. chabert* (Mull.); RICHMOND, P. U. S. Mus. xix, p. 692.
- Prionops vinaceigularis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 162 & 163.
- Collyriocincla cerviniventris*, n. sp., Queensland; NORTH, Rec. Austral. Mus. iii, pp. 49 & 50.
- Grallina bruynii*, notes on; DE VIS, Ibis, 1897, pp. 378 & 379.

## Family AMPELIDÆ.

- Ampelis cedrorum*, photographed from life; SHUFELDT, Amer. Natural. xxxi, pp. 120-123, pl. i.

## Family VIREONIDÆ.

- Vireo philadelphicus*, notes on; DWIGHT, Auk, xiv, pp. 259-272, pl. ii, fig. 2. *V. gilvus*, figured; *t. c.* pl. ii, fig. i.

## Family SYLVIIDÆ.

- Sylvia nisoria*, in Norfolk; SLATER, Bull. Ornith. Club, vii, p. viii: in Argyleshire; HARVIE-BROWN & CLARKE, Ann. Scott. Nat. Hist. 1897, p. 42. *S. heinekeni*, remarks on the female; HARTWIG, Ornith. Monber. v, pp. 73 & 74. *S. blanfordii*, near Suakin; CHOLMLEY, Ibis, 1897, pp. 203 & 204. *S. margelanica*, n. sp., Marguelane, Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, p. 72.

- Phylloscopus superciliosus*, in Italy; VALLON, *Avicula*, i, pp. 31-33.  
*P. rufus*, distribution in the Clyde area; PATERSON, *Tr. Soc. Glasgow* (2) v, pt. i, pp. 48-52. *P. proregulus*, in Norfolk; DRESSER, *Zoologist*, 1897, pp. 5-7; SOUTHWELL, *t. c.* pp. 8-12: figured; DRESSER, *Tr. Norfolk Soc.* vi, pl. to p. 280. *P. proregulus*, *P. viridanus*, figured; LILFORD, *Col. Fig. Brit. B.*, pt. xxxv.  
*Geobasileus chrysorrhoa*, figured; NORTH, *Agric. Gaz. N.S.W.*, vii, pl. xii, fig. 2.  
*Acanthiza nana*, figured; NORTH, *op. cit.* viii, pl. xii, fig. 1.  
*Hypolais polyglotta*, in Sussex; SAUNDERS, *Ibis*, 1897, pp. 627 & 628.  
*H. icterina*, from Burwash, Sussex; TICEHURST, *Bull. Ornith. Club*, vi, p. li: notes on; BENSON, *Irish Natural.* vi, pp. 117-119.  
*Sylvia isabellina*, n. sp., Somaliland; ELLIOT, *Field Columb. Mus.*, *Ornith.* i, No. 2, p. 44. *S. baraka*, n. sp., Uganda; SHARPE, *Bull. Ornith. Club*, vii, p. vi. *S. jacksoni*, n. sp., Uganda, *id. t. c.* p. vii.  
*Acrocephalus cervinus*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, p. 386. *A. palustris*, *A. horticolus*, and *A. streperus*, notes on; FLOERICKE, *J. Ornith.* 1897, pp. 178-183.  
*Cettia russula*, n. sp., N.W. Fohkien; SLATER, *Ibis*, 1897, p. 171.  
*Locustella luscinioides*, song; HERMAN, *Ornith. Monber.* v, pp. 20-23; VON HOMEYER, *t. c.* p. 63; VON MADARASZ, *t. c.* pp. 69-73; CHERNEL VON CHERNELHAZA, *t. c.* pp. 105 & 106.  
*Megalurus punctatus*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, pp. 385 & 386.  
*Cisticola nigriloris*, n. sp., Nyasaland; SHELLEY, *t. c.* p. 536, pl. xii, fig. 2.  
*Malurus melanocephalus*, figured; NORTH, *Agric. Gaz. N.S.W.* viii, pl. xi, fig. 1. *M. cyaneus*, figured; *id. t. c.* pl. xi, fig. 2.  
*Melocichla mentalis*, from Uganda; SHARPE, *Bull. Ornith. Club*, vi, p. xlvi.  
*Prinia valida*, notes on breeding; nest figured; MADARASZ, *Termes. Fuzetek*, xx, pp. 347-350, fig. 6.  
*Dryodromas rufidorsalis*, n. sp., Teita, East Africa; SHARPE, *Bull. Ornith. Club*, vi, p. xlvi.  
*Burnesia leucopogon*, from Uganda; SHARPE, *t. c.* p. xlvi. = *B. uganda*, n. sp., *id. op. cit.* vii, p. vi; [= *B. reichenowi*, Hartl.]. *B. somalica*, n. sp., Somaliland; ELLIOT, *Field Columb. Mus.*, *Ornith.* i, No. 2, p. 45.  
*Orthotomus*: key to the Philippine species; OGILVIE GRANT, *ibis*, 1897, pp. 229 & 230.  
*Phyllergates everetti*, n. sp., South Flores; HARTERT, *Nov. Zool.* iv, pp. 517 & 518. *P. cucullatus philippinus*, n. subsp., North Luzon; *id. t. c.* p. 517.

### Family TURDIDÆ.

- Turdus viscivorus deichleri*, n. subsp., S. Tunis; ERLANGER, *Ornith. Monber.* v, p. 192. *T. daguae*, n. sp., W. Colombia; BERLEPSCH, *t. c.* p. 176.  
*T. sibiricus*, nesting on the Yenesei; POPHAM, *Ibis*, 1897, p. 92.  
*T. varius*, egg figured; NEWTON, *P. Zool. Soc. London*, 1897, pl. li, 5 figg. *T. pallasi*, notes on in captivity; OWEN, *Auk*, xiv, pp. 1-8.  
*T. torquatus*, notes on; GODFREY, *Sci. Gossip*, 1897, pp. 217 & 218.  
*Merula tamaulipensis*, n. sp., Mexico; NELSON, *Auk*, xiv, pp. 75 & 76.  
*M. torquata* and *M. alpestris*, notes on; GIGLIOLI & SALVADORI, *Avicula*, i, pp. 40-42.  
*Catharus occidentalis fulvescens*, n. subsp., Mexico; NELSON, *Auk*, xiv, p. 76.

- Myiadestes coracinus*, n. sp., W. Colombia; BERLEPSCH, Ornith. Monber. v, p. 175.  
*Larvivora obscura*, described; DEDITIUS, J. Ornith. 1897, pp. 70-72.  
*Erithacus titis* [= *Ruticilla titis*, Auct.], notes on the plumages; KLEIN-SCHMIDT, t. c. pp. 105-111.  
*Ruticilla erythrogastra* (Güld.), distinct from *R. grandis*, Gould; ROTHSCHILD, Nov. Zool. iv, pp. 167 & 168.  
*Copsychus inexpectatus*, n. sp., Madagascar; RICHMOND, P. U. S. Mus. xix, pp. 688 & 689.  
*Bessonornis modesta*, n. sp., Nyasaland; SHELLEY, Ibis, 1897, p. 539, pl. xii, fig. 1.  
*Brachypteryx sinensis*, n. sp., Kuatun, N.-W. Fohkien; RICKETT, Bull. Ornith. Club, vi, p. 1. *B. floris*, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 170.

## Family TROGLODYTIDÆ.

- Hylorchilus*, n. g., type *H. sumichrasti* (Lawr.); NELSON, Auk, xiv, pp. 71 & 72.  
*Cistothorus palustris plesius*, n. subsp., New Mexico; OBERHOLSER, Auk, xiv, pp. 188-193.  
*Thryothorus cerroensis*, n. sp., Lower California; ANTHONY, t. c. pp. 166 & 167.  
*Henicorhina mexicana*, n. sp., Mexico; NELSON, t. c. pp. 73 & 74. *H. leucophrys capitalis*, n. subsp., Mexico; *id.* t. c. p. 74.  
*Heleodytes alticolus*, n. sp., Mexico; NELSON, t. c. p. 68. *H. occidentalis*, n. sp., Mexico; *id.* t. c. p. 69. *H. humilis rufus*, n. subsp., Mexico; *id.* t. c. p. 69. *H. capistratus nigricaudatus*, n. subsp., Mexico; *id.* t. c. p. 70.  
*Hemiura pacifica*, n. sp., Mexico; NELSON, t. c. pp. 72 & 73.  
*Salpinctes obsoletus neglectus*, n. subsp., Guatemala; NELSON, t. c. pp. 70 & 71.  
*Orthnocichla everetti*, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 170.  
*Pnoepyga everetti*, n. sp., Flores; ROTHSCHILD, t. c. p. 168.

## Family MIMIDÆ.

- Note on the genus *Lucar* of Bartram; COUES, Auk, xiv, p. 97.  
*Harporhynchus lecontei arenicola*, n. subsp., Lower California; ANTHONY, t. c. pp. 167 & 168.

## Family TIMELIIDÆ.

- Ianthocincla bieti*, n. sp., Yun-nan; OUSTALET, Bull. Mus. Paris, 1897, pp. 163 & 164.  
*Psophodes crepitans lateralis*, n. subsp., North-East Queensland; NORTH, Rec. Austral. Mus. iii, p. 13.  
*Crateropus reinwardti*, figured; REICHENOW, J. Ornith. 1897, taf. ii, fig. 2.  
*Actinodura souliei*, n. sp., Yun-nan; OUSTALET, Bull. Mus. Paris, 1897, pp. 164 & 165.  
*Trochalopteron sukatschewi*, described; DEDITIUS, J. Ornith. 1897, pp. 67-69.  
*Garrulax schmackeri*, n. sp., Hainan; HARTLAUB, Abh. Ver. Bremen, xiv, pp. 349, 350, & 380-382, taf. iv.

- Sphenura broadbenti*, nest and eggs; NORTH, P. Linn. Soc. N.S.W. xxii, pp. 58-60.
- Napothera pyrrhoptera*, note on; MARTORELLI, Atti Soc. Ital. xxxvi, p. 203.
- Myiothera epilepidota*, note on; MARTORELLI, *t. c.* p. 203.
- Crateroscelis montana*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 387.
- Drymacædus brevirostris*, n. sp., British New Guinea; DE VIS, *t. c.* pp. 386 & 387.
- Calamanthus fuliginosus*, distribution in New South Wales; NORTH, Rec. Austral. Mus. iii, pp. 14 & 15.
- Rhabdochlamys*, n. g., type *R. dejeani*, n. sp., Western China; OUSTALET, Bull. Mus. Paris, 1897, pp. 208 & 209.
- Macronus*: key to the species found in the Philippines; OGILVIE GRANT, Ibis, 1897, p. 231.
- Alcippe genestieri*, n. sp., Western China; OUSTALET, Bull. Mus. Paris, 1897, pp. 210 & 211.
- Zosterornis*: key to the species; OGILVIE GRANT, Ibis, 1897, pp. 233 & 234.
- Z. pygmaeus*, figured; *id. t. c.* pl. vi, fig. 1.
- Yuhina pallida*, n. sp., Kuatun, N.-W. Fohkien; DE LA TOUCHE, Bull. Ornith. Club, vi, p. 1.
- Proparus guttaticollis*, n. sp., Kuatun, N.-W. Fohkien; *id. t. c.* p. 1.
- Suthora davidiana*, n. sp., N.-W. Fohkien; SLATER, Ibis, 1897, p. 172, pl. iv, fig. 1.
- S. przewalskii*, described; DEDITIUS, J. Ornith. 1897, pp. 69 & 70.
- Ephthianura aurifrons* and *E. albifrons*, figured; NORTH, Agric. Gaz. N.S.W. viii, pl. xiii.

### Family PYCNONOTIDÆ.

- Ægithina nigrilutea*, in Cutch; LISTER, J. Bombay Soc. x, pp. 695 & 696.
- Ixulus rouxi*, n. sp., Yun-nan; OUSTALET, in Prince Henri D'Orleans' "From Tonkin to India," App. B, p. 424.
- Phyllostrephus baumannii*, figured; REICHENOW, J. Ornith. 1897, taf. ii, fig. 1.
- Andropadus congener*, n. sp., Togo; REICHENOW, *t. c.* p. 45. *A. masukuensis*, n. sp., Nyasaland, SHELLEY, Ibis, 1897, p. 534.
- Xenocichla pallidigula*, n. sp., Uganda; SHARPE, Bull. Ornith. Club, vii, p. vii.

### Family CAMPOPHAGIDÆ.

- Campophaga phænicea*, from Uganda; SHARPE, Bull. Ornith. Club, vi, p. xlviii.
- Artamides mindanensis*, Steere, = *Graucalus kochii*, Kutter; HARTERT, Nov. Zool. iv, p. 11.
- Edoliisoma tenuirostre*, notes on the nidification; SHEPHERD, Victorian Natural. xiii, pp. 135 & 136; CAMPBELL, *t. c.* pp. 4 & 5.

### Family MUSCICAPIDÆ.

- Muscicapa grisola*, curious nesting-place; HOMEYER, Ornith. Monber. v, p. 5.
- Alseonax subadusta*, n. sp., Nyasaland; SHELLEY, Ibis, 1897, p. 542.
- Pachyprora bella*, n. sp., Somaliland; ELLIOT, Field Columb. Mus., Ornith. i, No. 2, p. 47.

- Diaphorophyia chalybea*, n. sp., Cameroons; REICHENOW, Ornith. Monber. v, p. 46.
- Microeca oscillans*, n. sp., South Flores; HARTERT, Nov. Zool. iv, pp. 170 & 171.
- Petrarca bivittata*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 376.
- Muscicapula nigrorum*, n. sp., Negros; WHITEHEAD, Bull. Ornith. Club, vi, p. xliii.
- Gerygone everetti*, n. sp., I. of Savu; HARTERT, Nov. Zool. iv, p. 267. *G. ramuensis*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 26. *G. murina* and *G. brunnea*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 377 & 378.
- Pacilodryas nitida*, *P. caniceps*, *P. loralis*, *P. subcyanea*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 376 & 377.
- Chasiempsis sandvicensis*, nest described, measurements of eggs; NEWTON, P. Zool. Soc. London, 1897, p. 892.
- Rhipidura nigrifrons*, *R. albicauda*, *R. oreas*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 374 376.
- R. dahl*, n. sp., New Pomerania; REICHENOW, Ornith. Monber. v, p. 7.
- Chloropeta similis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 163 & 164.
- Callicapra ceylonensis sejuncta*, n. subsp., South Flores; HARTERT, Nov. Zool. iv, p. 526.
- Cryptolopha ricketti*, n. sp., N.-W. Fohkien; SLATER, Ibis, 1897, pp. 174 & 175, pl. iv, fig. 2.
- C. montis floris*, n. subsp., South Flores; HARTERT, Nov. Zool. iv, p. 171.
- Musciparus*, n. g., type *M. tappenbecki*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 25.
- Bathmisyrra*, n. g., type *B. rufum*, German New Guinea; REICHENOW, t. c. p. 161.
- Machærirhynchus flaviventer*, eggs described, nest figured; LE SOUEF, Ibis, 1897, pp. 398 & 399, fig. 3.
- Myiagra rufipula colonus*, n. subsp., I. of Savu; HARTERT, Nov. Zool. iv, pp. 266 & 267.
- Arses luterbachii*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 161. *A. candidior*, eggs described, nest figured; LE SOUEF, Ibis, 1897, pp. 397 & 398, fig. 2.
- Monacha divaga*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 374.
- Siphia brunneata*, n. sp., N.-W. Fohkien; SLATER, t. c. pp. 175 & 176.

### Family HIRUNDINIDÆ.

- Hirundo rustica*, wintering in Germany; BIEDERMANN, Ornith. Monber. v, pp. 76-78; wintering in Europe; RAMDOHN, t. c. pp. 155-160.
- H. rustica*, notes of the observations; VERY, Tr. Hertfordsh. Soc. ix, pp. 126-128.
- Progne subis*, breeding in electric arc-light caps; W. FAXON, Auk, xiv, pp. 407 & 408.

### Family TYRANNIDÆ.

- Elainia albiventris*, n. sp., Venezuela; CHAPMAN, Auk, xiv, pp. 368 & 369.
- Contopus pertinax pallidiventris*, n. subsp., Arizona; CHAPMAN, t. c. pp. 310 & 311.
- Platysaris aglaie sumichrasti*, n. subsp., Mexico; NELSON, t. c. pp. 52 & 53.



- Leptotriccus flaviventris*, n. sp., Venezuela; HARTERT, Bull. Ornith. Club, vii, p. v.
- Serpophaga inornata*, n. sp., San Lorenzo, Argentina; SALVADORI, Boll. Mus. Torino, xii, No. 292, pp. 13 & 14. *S. munda*, male described; *id. t. c. p. 14*.
- Sublegatus frontalis*, n. sp., Caiza; SALVADORI, *t. c.* pp. 14 & 15.
- Todirostrum maculatum*, notes on nesting; GOELDI, Ibis, 1897, pp. 368-370.
- Euscarthmus viridiceps*, n. sp., San Lorenzo, Argentina; SALVADORI, Boll. Mus. Torino, No. 292, p. 12.
- Phyllomyias berlepschi*, n. sp., San Lorenzo, Argentina; SALVADORI, *t. c.* p. 13.
- Hapalocercus striaticeps*, n. sp., British Guiana; SALVIN, Bull. Ornith. Club, vii, p. xvi.
- Todirostrum pictum*, n. sp., British Guiana; SALVIN, *t. c.* p. xv.
- Platyrhynchus griseiceps*, n. sp., British Guiana; SALVIN, *t. c.* p. xv.
- Empidonax insulicola*, n. sp., California; OBERHOLSER, Auk, xiv, pp. 300-303; nesting habits; BLACK, *t. c.* pp. 405 & 406. *E. bairdi occidentalis*, n. subsp., Mexico; NELSON, *t. c.* p. 53. *E. flaviventris*, probable first description of; COUES, *t. c.* p. 218.
- Myiarchus mexicanus*, nomenclature; COUES, *t. c.* p. 92.

### Family COTINGIDÆ.

- Rupicola crocea*, nest and eggs; SCLATER, Bull. Ornith. Club, vi, pp. xxvi & xxvii.
- Capsiempis caudata*, n. sp., British Guiana; SALVIN, *t. c.* p. xvi.
- Carpodectes hopkei*, n. sp., West Colombia; VON BERLEPSCH, Ornith. Monber. v, p. 174.
- Pipra opalicans*, rediscovered near Pará; VON BERLEPSCH, *op. cit.* vii, p. iii.

### Family DENDROCOLAPTIDÆ.

- Sittasomus phelpsi*, n. sp., Venezuela; CHAPMAN, Auk, xv, p. 369.
- Automolus pectoralis*, n. sp., Mexico; NELSON, *op. cit.* xiv, p. 54.
- Picolaptes compressus insignis*, n. subsp., Mexico; NELSON, *t. c.* p. 54.

### Family FORMICARIIDÆ.

- Formicivora speciosa*, Salv., figured; ROTHSCILD, Nov. Zool. iv, pl. i, fig. 3.

### Family PTEROPTOCHIDÆ.

- Hylaetes megapodius*, egg; SCLATER, Bull. Ornith. Club, vii, p. xxiii.

## IV. REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER, F.R.S.

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L. MAGGI, Rend. Ist. Lomb. (2) xxx, pp. 230-252, pl. and Arch. ital. Biol. xxvii, pp. 362-375, pl., writes on the so-called interparietal bones in fossil Reptiles and Stegocephalians.

A. FERRIN, C.R. Ac. Sci. cxxv, pp. 46-48, writes on the homology of the elements of the shoulder-girdle in Reptiles and Batrachians.

E. GÖPPERT, Morphol. Jahrb. xxv, pp. 244-249, remarks on Rabl's conception of the morphology of the ribs.

G. BAUR, Zool. Bull. i, pp. 41-55, criticising Bumpus's paper on homocosis in *Necturus*, summarises our knowledge of cases of intercalation of vertebræ in Reptiles and Batrachians.



- G. RUGE, *Gegenbaur Festschrift*, iii, pp. 284–339, figg., writes on the peripheral area of the facial nerve in Reptiles and Batrachians.
- C. POLI, *Arch. mikr. Anat.* xlviii, pp. 644–686, pls. xxxii & xxxiii, writes on the development of the auditory capsule.
- C. DELEZENNE, *C.R. Soc. Biol.* (10) iv, pp. 462 & 463, and 489 & 490, has made experiments on the coagulation of the blood in Reptiles and Batrachians.
- L. VAILLANT has prepared a guide to the Reptile menagerie in the Paris Museum (Paris: 1897, 8vo.).
- G. C. BATEMAN's "*Vivarium*" (London: 1897, 8vo.) contains information as to the Reptiles and Batrachians suitable as pets.
- F. WERNER, *Zool. Garton*, xxxviii, pp. 86–95, has notes on the habits of various Reptiles and Batrachians in confinement.

## REPTILIA.

- A. MILANI, *Zool. Jahrb. Anat.* x, pp. 93–156, figg., pls. ix–xii, brings out the second part of his contributions to the knowledge of the Reptilian lung, this part dealing with the Chelonians and Crocodiles.
- L. GIANELLI & E. GIACOMINI investigate the histology of the digestive canal of Reptiles. *Pr.-verb. Acc. Fisiocr. Siena*, ccv, pp. 43–49, 75–84, 105–113, and *Mon. Zool. ital.* viii, pp. 14–16.
- H. L. BRUNER, *Anat. Anz.* xiii, pp. 217 & 218, describes new nasal muscles in Reptiles.
- F. K. STUDNICKA, *Jena. Zeitschr.* xxxi, pp. 20–23, studies the structure of the optic nerves in the principal groups of Reptiles.
- G. MANCA publishes French abstracts of his physiological experiments on starvation in Lizards and Tortoises. *Arch. ital. Biol.* xxvii, pp. 83–102.
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## SQUAMATA.

- E. BUGNION, *Arch. Sci. Nat.* (4) iv, pp. 489 & 490, remarks on the development of the epiphysis and parietal organ in Lizards and Snakes.

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- F. LEGGE publishes a pamphlet (Cagliari: 1896, 8vo.) on the morphology of the mandible and on the teeth of *Chalcides ocellatus*.
- N. FREDERICI, *Boll. Soc. Napoli*, x, pp. 179–192, pl. v, writes on the urogenital apparatus of *Chalcides ocellatus*, Forsk.
- K. TELLYESNICZKY, *Math. naturw. Ber. Ungarn*, xiii, pp. 303–342, figg., writes on the structure of the male genital glands in Lizards.
- R. MONTI, *Boll. scient.* xix, pp. 99–106, pl. —, writes on the nervous plexus in the digestive canal of Lacertilia.
- D. BERTELLI, *Atti Soc. Tosc. Mem.* xv, pp. 120–138, pl. ii, investigates the development of the diaphragm in *Lacerta viridis*.
- L. WILL, *Arch. Ver. Mecklenb.* l, pp. 169–189, figg. pl. v & vi, writes on the cleavage of the egg in *Tarentola* and *Lacerta*.
- F. KOPSCH, *Mt. Ak. Berlin*, 1897, pp. 423–427, figg., writes on a case of double gastrula in *Lacerta agilis*.

- G. THILENIUS, *Morphol. Arbeit.* vii, pp. 515-545, pls. xvii & xviii, describes and discusses the changes in colour observed in some North African Lizards (*Varanus griseus*, *Uromastix acanthinurus*, *Agama inermis*).
- A. SUTHERLAND, P. Soc. Victoria (2) ix, pp. 57-61, makes observations on the temperatures of *Tiliqua scincoides*.
- G. TORNIER, SB. Ges. naturf. Berl. 1897, pp. 59-64, remarks on regenerated tails in Lizards. The same author, Zool. Anz. xx, pp. 356-360, figg., remarks on artificially produced triple tails in Lizards.

## GECKONIDÆ.

- Teratoscincus zarudnyi*, Nik., described and figured by NIKOLSKY, *Annuaire Mus. St. Petersb.* 1897, p. 309, pl. xviii, fig. 1.
- Stenodactylus guttatus*, Cuv. On a Tunisian variety: WERNER, *Verh. Ges. Wien*, xlvii, p. 405.
- Carphodactylus*, g. n., allied to *Gymnodactylus*, for *C. lævis*, sp. n., GÜNTHER, *l. c.* p. 403, pl. xi, N.E. Queensland.
- Gymnodactylus longipes*, Nik., described and figured by NIKOLSKY, *l. c.* p. 313, pl. xix, fig. 2; *G. fumosus*, F. Müll., figured by BOULENGER, P. Z. S. 1897, pl. vii, fig. 2; *G. jellesmæ*, sp. n., *id. ibid.* p. 203, pl. vii, fig. 1, Celebes; *G. borellii*, sp. n., PERACCA, *Boll. Mus. Torino*, xii, No. 274, p. 2, Salta, Argentina.
- Phyllurus lichenosus*, sp. n., GÜNTHER, *Nov. Zool.* iv, p. 404, pl. xii, N.E. Queensland.
- Gonatodes gaudichaudii*, D. & B., described and figured by WERNER, *Zool. Jahrb.*, Suppl. iv, p. 247, pl. xiii, fig. 8; *G. penangensis*, sp. n., S. S. FLOWER, P. Z. S. 1896, p. 863, pl. xlv, fig. 1, Penang.
- Homonota darwini*, Blgr., figured by WERNER, *l. c.* pl. xiii, fig. 7.
- Diplodactylus conspicillatus*, sp. n., LUCAS & FROST, P. Soc. Victoria (2) ix, p. 55, Charlotte Waters, Central Australia.
- Hemidactylus echinus*, O'Sh., described by SJÖSTEDT, *Bih. Svenska Ak. Handl.* xxiii, Pt. iv, No. 2, p. 10; *H. brookii*, Gray, var. n. *togoensis*, WERNER, *Verh. Ges. Wien*, xlvii, p. 397, Togoland, W. Africa; *H. newtoni*, sp. n., BETHENCOURT FERREIRA, J. Sci. Lisb. (2) iv, p. 249, Anno Bom Is., Guinea; *H. intestinalis*, sp. n., WERNER, *Zool. Anz.* xx, p. 263, Togoland, W. Africa.
- Mimetoazon floweri*, Blgr., = *Hemidactylus craspedotus*, Mocq. MOCQUARD, *Bull. Soc. Philom.* (8) ix, p. 20.
- Phyllopezus goyazensis*, Ptrs. Note by PERACCA, *Boll. Mus. Torino*, xii, No. 274, p. 3.
- Lepidodactylus brevipes*, sp. n., BOETTGER, *Zool. Anz.* xx, p. 161, Samar, Philippines; *L. gardineri*, sp. n., BOULENGER, *Ann. Nat. Hist.* (6) xx, p. 306, Rotuma Is., Polynesia.

## EUBLEPHARIDÆ.

- Eublepharis macularius*, Blyth, recorded from Chitral by ALCOCK & FINN, J. Asiat. Soc. Beng. lxx, ii, p. 566; *E. fuscatus*, Blgr., figured by VAN DENBURGH, *Pap. Calif. Ac.* v, p. 40, fig.; *E. lichtenfelderi*, sp. n., MOCQUARD, *Bull. Mus. Paris*, 1897, p. 213, Norway Islands, Gulf of Tonquin.
- Psilodactylus caudicinctus*, A. Dum., figured by WERNER, *Verh. Ges. Wien*, xlvii, pl. ii, fig. 4.
- Lepidoblepharis*, g. n., with round pupil and rudimentary lower eyelid. PERACCA, *Boll. Mus. Torino*, xii, No. 300, p. 1; *L. festæ*, sp. n., *id. ibid.* p. 2, fig., E. Ecuador.

## PYGOPODIDÆ.

- Delma* (*Cryptodelma*) *baileyi*, sp. n., GÜNTHER, Ann. Nat. Hist. (6) xix, p. 170, fig., Western Australia.  
*Ophidiocephalus*, g. n., allied to *Delma*, Gray, but with the ear hidden and no enlarged ventral scales; *O. tenuatus*, sp. n., LUCAS & FROST, P. Soc. Victoria, (2) ix, p. 54, Charlotte Waters, Central Australia.

## AGAMIDÆ.

- W. SAVILLE KENT, Nature, lvi, p. 271, has observed bipedal locomotion in two further members of this family, viz. *Physignathus lesueurii*, Gray, and *Amphibolurus muricatus*, White.  
*Draco volans*, L. Notes on the life-coloration by S. S. FLOWER, P. Z. S. 1896, p. 868; *D. spilonotus*, Gthr., and *beccarii*, Ptrs. & Dor., figured by BOULENGER, P. Z. S. 1897, pls. viii & ix.  
*Calotes cristatellus*, Kuhl. Notes on the changes of colour: S. S. FLOWER, P. Z. S. 1896, p. 871.  
*Agama inermis*, Reuss. Notes on the habits, and figures from life: THILENIUS, Zool. Jahrb. Syst. x, p. 233, pl. xvi, figg. 5-7; *A. aspera*, Wern., = *A. inermis*, Reuss, var., WERNER, Verh. Ges. Wien, xlvii, p. 405; *A. phillipsii*, Blgr., recorded from Erythrea by PERACCA, Boll. Mus. Torino, xii, No. 304; *A. flavicauda*, sp. n., WERNER, Zool. Anz. xx, p. 264, Hab. — ?  
*Stellio erythrogaster*, Nik., described and figured by NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 318, pl. xix, fig. 1; *S. erythrogaster*, var. n. *pallida*, id. *ibid.* p. 319, Meshed, E. Persia; *S. bochariensis*, sp. n., NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 159, Bokhara.  
*Phrynocephalus spiniventris*, Nik., described and figured by NIKOLSKY, t. c. p. 322, pl. xviii, fig. 3; *P. euphilopus*, sp. n., ALCOCK & FINN, J. Asiatic Soc. Beng. lxy, ii, p. 556, pl. xii, N. Baluchistan.  
*Amphibolurus muricatus*, White. Note on the habits: D. G. STEAD, Zoologist (4) i, p. 233.  
*Cromastix acanthinurus*, Bell. Notes on the habits, and figures from life: THILENIUS, Zool. Jahrb. Syst. x, p. 230, pl. xvi, figg. 1-4.

## IGUANIDÆ.

- Enyalioides festæ*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 300, p. 3, Ecuador.  
*Liosaurus leopardinus*, sp. n., WERNER, Zool. Jahrb., Suppl. iv, p. 248, pl. xiii, fig. 1, Santiago, Chili. [= *Diplolamemus darwini*, Bell.—REC.]  
*Aperopristis*, g. n., allied to *Liosaurus*, D. & B.; *A. paronæ*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 299, pl. —, Brazil.  
*Stenocercus roseiventris*, D. & B. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 4.  
*Tropidurus torquatus*, Wied. Notes on the life-history: GOELDI, Zool. Jahrb. Syst. x, p. 640, pl. xxvi, fig. 1.  
*Liocephalus bolivianus*, Blgr. [*caducus*, Cope]. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 5; *L. festæ*, sp. n., PERACCA, t. c. p. 6, fig. Ecuador.  
*Liolaemus elongatus*, p. 450, Neuquen, and *anomalus*, p. 452, Rioja, spp. nn., KOSLOWSKY, Rev. Mus. La Plata, xxii; *L. erythrogaster*, and *platei*, spp. nn., WERNER, Zool. Jahrb., Suppl. iv, pp. 250, 255, pl. xiii, figg. 2 & 3, Coquimbo, Chili.

- Saccodira pectinata*, D. & B. Præanal pores are sometimes present, and the Lizard is therefore referred to *Liolaemus*. WERNER, Zool. Jahrb., Suppl. iv, p. 256.
- Hoplocercus annularis*, O'Sh. Note by PERACCA, *l. c.* p. 7.
- Iguana tuberculata*, Laur. Notes on the life-history: GOELDI, Zool. Jahrb. Syst. x, p. 643, pl. xxvi, fig. 2.
- Ctenosaura quinquecarinata*, Gray, described and figured by DUGÈS, *Naturaleza* (2) ii, p. 523, pl. xxxiv.
- Dipsosaurus dorsalis*, B. & G., figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 44, fig.
- Crotaphytus baileyi*, Stejn., and *wisleszenii*, B. & G., figured by VAN DENBURGH, *l. c.* pp. 54 & 57, figg.
- Uta mearnsi*, Stejn., figured by VAN DENBURGH, *l. c.* p. 65, fig.
- Callisaurus ventralis*, Hallow., figured by VAN DENBURGH, *l. c.* p. 48, fig.
- Sceloporus*, Wgm. A revision of the species by BOULENGER, P. Z. S. 1897, pp. 474-522, figg.; *S. biserialatus*, Hallow., figured by VAN DENBURGH, *l. c.* p. 81, fig.; *S. asper*, sp. n., BOULENGER, *l. c.* p. 497, pl. xxxiii, La Cumbre de los Arrastrados, Jalisco, Mexico.

## ANGUIDÆ.

- Gerrhonotus scincicauda*, Skilt., and *burnetti*, Gray, figured by VAN DENBURGH, Pap. Calif. Ac. v, pp. 105 & 107, figg.
- Anguis fragilis*, L. On the habits and reproduction: ROLLINAT, Mem. Soc. zool. France, x, p. 88. Further notes on the habits in confinement: V. HORNUNG, Zool. Garten, xxxviii, pp. 306-312.

## ANNIELLIDÆ.

- Anniella pulchra*, Gray, figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 117, fig.

## HELODERMATIDÆ.

- A. DUGÈS, Act. Soc. Chili, vii, pp. 113-117, writes on the effects of the bite of *Heloderma horridum*.
- J. F. HOLM, Anat. Anz. xiii, pp. 80-85, figg. has notes on the histology of the poison glands of *Heloderma suspectum*.

## VARANIDÆ.

- Varanus griseus*, Daud. Notes on the habits: THILENIUS, Zool. Jahrb. Syst. x, p. 227.

## XANTUSIIDÆ.

- Xantusia riversiana*, Cope, figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 131, fig.

## TEIIDÆ.

- Tupinambis nigropunctatus*, Spix. Note on the eggs: GOELDI, Zool. Jahrb. Syst. x, p. 648, pl. xxvi, fig. 3.
- Dracæna guianensis*, Daud. On the habits and eggs: GOELDI, *l. c.* p. 649.

- Centropyx pelviceps*, Cope. Note by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 8.  
*Cnemidophorus tigris*, B. & G., and *beldingi*, Stejn. figured by VAN DENBURGH, Pap. Calif. Ac. v, pp. 135 & 142, figg.; *C. leachei*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 274, p. 6, S. Lorenzo, Argentina.  
*Alopoglossus buckleyi*, O'Sh., redescribed by PERACCA, l. c. p. 8.  
*Ecpleopus affinis*, Ptrs. Note by PERACCA, l. c. p. 10.  
*Euspondylus festae*, sp. n., PERACCA, l. c. p. 10, fig. Ecuador.  
*Ophiognomon trisanale*, Cope. Note by PERACCA, Boll. Mus. Torino, xii, No. 284, p. 1.

## AMPHISBÆNIDÆ.

- Amphibæna camura*, Cope, and *darwinii*, D. & B. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 8; *A. borellii*, sp. n., *id. ibid.* fig. Bolivian Chaco.  
*Lepidosternum microcephalum*, Wagl. Notes on the life history: GOELDI, Zool. Jahrb. Syst. x, p. 651, pl. xxvi, fig. 5; *L. boettgeri*, Blgr., = *L. affine*, Bttgr. GÜNTHER, Ann. Nat. Hist. (6) xx, p. 365.

## LACERTIDÆ.

- Poromera haugi*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 54, and Bull. Soc. Philom. (8) ix, p. 6, Lambarene, Gaboon. [= ? *P. fordii*, Hallow.—REC.]  
*Lacerta muralis*, Laur. Notes on the habits and reproduction: R. ROLLINAT, Bull. Soc. Acclim. xlv, p. 281.  
*Eremias*, Wgm. The following species, forming the section *Boulengeria*, Lat., are described, with detail-figures, by BOULENGER, P. Z. S. 1896, pp. 920-930: *E. mucronata*, Blanf., *erythrosticta*, Blgr., *smithi*, Blgr., *striata*, Ptrs., and *brenneri*, Ptrs.; *E. nigrocellata*, Nik., described and figured by NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 326, pl. xviii, fig. 2; *E. martini*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 468, Obok.  
*Scapteira lineolata*, Nik., described and figured by NIKOLSKY, l. c. p. 330, pl. xviii, fig. 4; *S. aporosceles*, sp. n., ALCOCK & FINN, J. Asiat. Soc. Beng. lxxv, ii, p. 559, pl. xiii, N. Baluchistan.

## SCINCIDÆ.

- Egernia frerei*, sp. n., GÜNTHER, Nov. Zool. iv, p. 405, N. E. Queensland.  
*Trachysaurus rugosus*, Gray. Note on the habits: J. BERG, Zool. Garten, xxxviii, p. 277.  
*Mabuia madaraszi*, sp. n., MÉHELY, Termes. Fuzetek, xx, p. 59, Ceylon [= *M. macularia*, Blyth.—REC.]  
*Lygosoma callistum*, Ptrs., and *emigrans*, L. de Jeude, noticed and figured by v. LIDTH DE JEUDE, Notes Leyden Mus. xviii, pp. 252 & 253, pl. vi, figg. 2 & 3; *L. Muelleri*, Schleg. Note by v. LIDTH DE JEUDE, l. c. p. 253; *L. celebensis*, F. Müll., *inconspicuum*, F. Müll., and *textum*, F. Müll., figured by BOULENGER, P. Z. S. 1897, pl. xi. *Liolepis micans*, Werner, = *Lygosoma aneum*, Gir., LUCAS & FROST, Tr. N. Zealand Inst. xxix, p. 278; *L. tropidonotus*, p. 209, pl. x, fig. 1, *sarasinorum*, p. 210, pl. x, fig. 2, and *parvum*, p. 215, pl. xi, fig. 4, spp. nn., BOULENGER, P. Z. S. 1897, Celebes; *L. nigrolineatum*, p. 6, pl. i, fig. 1, *stanleyanum*, p. 7, pl. i, fig. 2, *elegans*, p. 8, pl. i, fig. 3, *curtum*, p. 9, and *iridescentes*, p. 9, pl. i, fig. 4, spp. nn., BOULENGER, Ann. Nat. Hist.

- (6) xix, Mt Victoria, New Guinea; *L. everetti*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 504, Sumba; *L. gemmiventris* and *vigintiserierum*, spp. nn., SJÖSTEDT, Zool. Anz. xx, p. 56, and Bih. Svenska Ak. Handl. xxiii, Pt. iv, No. 2, pp. 16 & 18, pls. i & ii, Cameroon; *L. tigrinum*, sp. n., v. LIDTH DE JEUDE, Notes Leyden Mus. xviii, p. 250, pl. vi, fig. 1, N. E. New Guinea [name preoccupied, De Vis, 1888.—REC.]; *L. johnstoni*, sp. n., BOULENGER, P. Z. S. 1897, p. 801, pl. xlv, fig. 1, N. Nyassaland; *L. akeleyi*, sp. n., MEEK, Publ. Field Mus. Zool. i, p. 182, fig. Somaliland [= *Chalcides ocellatus*, Forsk.—REC.]; *L. (Hinulia) compressicaudum*, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 210, Australia; *L. (Homolepida) moellendorffi*, sp. n., BOETTGER, Zool. Anz. xx, p. 162, Tablas, Philippines.
- Eumeces skiltonianus*, B. & G., figured by VAN DENBURGH, Pap. Cal. Ac. v, p. 145, fig.
- Chalcides boulengeri*, Anders. Note by WERNER, Verh. Ges. Wien, xlvii, p. 405.
- Sepsina arduvini*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 211, Madagascar.

## RHIPTOGLOSSA.

- Chamaeleon vulgaris*, Daud. Notes on the habits: THILENIUS, Zool. Jahrb. Syst. x, p. 225; *C. parvilobus*, Blgr. Note by WERNER, Verh. Ges. Wien, xlvii, p. 402.
- Rhampholeon mandera*, sp. n., MEEK, Publ. Field Mus. Zool. i, p. 183, Somaliland [= ? *R. kerstenii*, Ptrs.—REC.].

## PYTHONOMORPHA.

- S. W. WILLISTON, Kansas Quart. vi, p. 107, pl. xiii, gives restorations of three Kansas Mosasaurs: *Clidastes velox*, Marsh, *Platecarpus coryphaeus*, Cope, and *Tylosaurus proriger*, Cope. The same author also has remarks on the limbs and scales of the latter species, t. c. p. 99, pls. ix-xii.
- Mosasaurus gaudryi*, sp. n., THÉVENIN, Bull. Soc. geol. France (3) xxiv, p. 902, pl. xxix, Chalk of Vaux-Eclusier, near Péronne, France.
- Platecarpus somenensis*, sp. n., THÉVENIN, t. c. p. 907, pl. xxx, Chalk of Vaux-Eclusier, near Péronne.
- Brachysaurus*, g. n. (*Tylosauridae*?) for *B. overtoni*, sp. n., WILLISTON, t. c. p. 96, pl. viii, Cretaceous of South Dakota.

## OPHIDIA.

- L. KATHARINER, Zool. Jahrb. Anat. x, pp. 45-92, figg., pls. vi-viii, investigates the structure and replacement of the poison-fangs of Snakes.
- C. BISOGNI, Anat. Anz. xiii, pp. 490-494, figg., has a further communication on a special gland in the lingual sheath of Vipers, and, pp. 495-498, figg., on the anatomical correspondence of the sub-lingual gland with the chin-shields in the non-poisonous Snakes.
- J. BETHENCOURT FERREIRA, J. Sci. Lisb. (2) iv, pp. 235-248, writes on Snake poison and antidotes.
- A. G. CARDEW, J. Bombay Soc. x, pp. 585-596, gives a rough key to the identification of the Indian *Ophidia*.

## TYPHLOPIDÆ.

- Typhlops bicolor*, Ptrs. = *T. australis*, Gray; WAITE, Tr. R. Soc. S. Austral. xxi, p. 26. *T. pinguis*, sp. n., *id. ibid.* p. 25, pl. iii, S. Australia. *T. florensis*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 505, Flores. *T. ruber*, sp. n., BOETTGER, Zool. Anz. xx, p. 164, Samar, Philippines.

## GLAUCONIIDÆ.

- Glauconia blanfordii*, Blgr., recorded from N. Baluchistan by ALCOCK & FINN, J. Asiat. Soc. Beng. lxx, ii, p. 561. *G. humilis*, B. & G., figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 151, fig.

## BOIDÆ.

- H. C. E. ZACHARIAS, Zool. Jahrb. Syst. x, pp. 56-90, figg., pls. vii-x, has made a study of the cephalic lepidosis in the *Boidæ*, from the phylogenetic point of view.  
J. J. QUELCH, Timehri (2) xi, pp. 294-313, has a popular article on the *Boidæ* of Tropical America.  
*Liasis tornieri*, sp. n., WERNER, Zool. Anz. xx, p. 261, New Guinea.  
*Lichanura roseofusca*, Cope, figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 153.

## ILYSIIDÆ.

- Cylindrophis opisthorhodus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 506, Lombok.

## COLUBRIDÆ.

*Aglypha*.

- Tropidonotus natrix*, L. On specimens occurring out at sea: BÖSE, Zool. Anz. xx, p. 255; *T. viperinus*, Latr. On variations in the head-shields in Tunisian specimens: WERNER, Verh. Ges. Wien, xlvii, p. 406; *T. tessellatus*, Laur., varr. nn. *hagenbecki*, *lineaticollis*, and *nigerrima*: WERNER, Zool. Anz. xx, pp. 262 & 263, Transcaspia; *T. grahami*, B. & G. Note on its parturition: F. C. BAKER & F. M. WOODRUFF, Science (2) v, p. 447; *T. sarasinorum*, Blgr., and *celebicus*, Ptrs. and Dor., figured by BOULENGER, P. Z. S. 1897, pl. xii, figg. 1 & 2; *T. depressiceps*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 402, Cameroon, W. Africa.  
*Helicops pictiventris*, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 205, Porto Alegre, Brazil.  
*Diaphorolepis wagneri*, Jan (nom. nud.), described and head figured by WERNER, SB. Ak. Munchen, 1897, p. 203.  
*Pseudohoodon*, g. n., allied to *Boodon*, D. & B.; *P. gasae*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 273, fig., Maldi, Erythrea.  
*Glypholycus whytii*, sp. n., BOULENGER, P. Z. S. 1897, p. 802, pl. xlvii, fig. 2, N. Nyassaland.  
*Gonionotophis vossii*, Bttgr. = *G. brussauxi*, Mocq.; MOCQUARD, t. c. p. 13.  
*Simocephalus capensis*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 374; *S. guirali*, Mocq. Note by MOCQUARD, Bull. Soc. Philom. (8) ix, p. 13.

- Lycophidium irroratum*, Leach. Note by WERNER, Verh. Ges. Wien, xlvii, p. 398.
- Lycodon stormi*, Bttgr., figured by BOULENGER, P. Z. S. 1897, pl. xii, fig. 3.
- Stegonotus reticulatus*, Blgr. = *S. modestus*, Schleg.; v. LIDTH DE JEUDE, Notes Leyden Mus. xviii, p. 254.
- Zamensis algrus*, Jan, and *hippocrepsis*, L. On variations in the head-shields in Tunisian specimens: WERNER, Verh. Ges. Wien, xlvii, p. 406, pl. ii, fig. 7.
- Lytorhynchus maynardi*, sp. n., ALCOCK & FINN, J. Asiat. Soc. Beng. LXV, ii, p. 562, pl. xiv, N. Baluchistan.
- Phrynonax pacionotus*, Gthr. Note by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 14.
- Natrix cinnamomea*, Wagl. = *Phrynonax fasciatus*, Ptrs.: WERNER, SB. Ak. Munchen, 1897, p. 207.
- Coluber longissimus*, Laur. On its occurrence in the Department Orne, France: LETACQ, Bull. Soc. Rouen, xxxii, p. 132.
- Herpetodryas carinatus*, L. On the eggs: GOELDI, Zool. Jahrb. Syst. x, p. 689, pl. xxvii, fig. 11.
- Rhynchopsis*, g. n., allied to *Dendrophis*, but with non-oblique scales and the snout ending in a conical scaly appendage. MOCQUARD, Bull. Mus. Paris, 1897, p. 214; *R. boulengeri*, sp. n., *id. ibid.* p. 215, Norway Is., Gulf of Tonquin.
- Dendrelaphis inornatus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 507, Sumba and Savu.
- Leptophis ortonii*, Cope, p. 829, pl. lxiv, fig. 1, *mexicanus*, D. & B. p. 831, pl. lxiv, fig. 4, *modestus*, Gthr., p. 833, pl. lxv, fig. 1, *bilineatus*, Gthr. p. 834, pl. lxiv, fig. 2, and *diploptropis*, Gthr., p. 835, pl. lxiv, fig. 3, described and figured by BOCOURT, Miss. Sc. Mex. Rept.; *L. diploptropis*, Gthr., var. n. *aneus*, *id. ibid.* p. 837, Mexico.
- Philothamnus semivariatus*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375; *P. nitidus*, Gthr. Note by WERNER, Verh. Ges. Wien, xlvii, p. 403.
- Uromacer ricardinii*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 282, S. Paulo, Brazil.
- Liophis sagittifer*, Jan. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 10; *L. guentheri*, sp. n., *id. ibid.* p. 11, Bolivian Chaco.
- Rhadinea occipitalis*, Jan. Note by PERACCA, t. c. No. 284, p. 3; *R. festae*, sp. n., PERACCA, t. c. No. 300, p. 16, Ecuador; *R. modesta*, sp. n., KOSLOWSKY, Revist. Mus. La Plata, xxii, p. 453, Salta, Buenos Ayres.
- Oreophis*, g. n., allied to *Coronella*, Laur., for *O. boulengeri*, sp. n., DUGÈS, P. Z. S. 1897, p. 284, fig. 1, Guanajuato, Mexico.
- Spaniopholis*, g. n., with the anterior maxillary teeth longest, keeled scales, and the eye large with vertical pupil; *S. souliei*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 216, Yunnan.
- Oligodon subgriseus*, var. n. *alternans* (BOCAGE), BETHENCOURT FERREIRA, J. Sci. Lisb. (2) iv, p. 224, Goa.
- Prosymna bocagii*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 278, fig. Ubangi, Congo Free State.
- Contia nasus*, Gthr. On its variations in lepidosis and coloration, DUGÈS, Mem. Soc. Ant. Alzate, xi, p. 409, pl. v.
- Ablabes philippinus*, sp. n., BOETTGER, Zool. Anz. xx, p. 164, Culion & Samar, Philippines.
- Grayia furcata*, Mocq., = *G. ornata*, Bocage, MOCQUARD, Bull. Soc. Philom. (8) ix, p. 8; *G. tholloni*, sp. n., *id. ibid.* p. 11, French Congo.
- Atractus elaps*, Gthr. Note by PERACCA, Boll. Mus. Torino, xii, No. 284, p. 4; *A. collaris*, sp. n., *id. ibid.* fig. E. Peru; *A. guentheri*, Wuch. A variety from Ecuador, described by WERNER, SB. Ak. Munchen, 1897, p. 209.



- Agrophis sarasinorum*, F. Müll., figured by BOULENGER, P. Z. S. 1897, pl. xiii, fig. 1.  
*Calamaria acutirostris*, Blgr., pl. xiii, fig. 2, *nuchalis*, Blgr., pl. xiii, fig. 3, *muelleri*, Blgr., pl. xiv, fig. 1, *curta*, Blgr., pl. xiv, fig. 2, and *gracilis*, Blgr., pl. xiv, fig. 3, figured by BOULENGER, *t. c.*; *C. collaris*, sp. n., *id. ibid.* p. 225, pl. xiv, fig. 4, Celebes.

### *Opisthoglypha.*

- Hypsirhina matannensis*, sp. n., BOULENGER, P. Z. S. 1897, p. 225, pl. xv, fig. 1, Celebes.  
*Dipsadoboa unicolor*, Gthr. Note by WERNER, Verh. Ges. Wien, xlvii, p. 399.  
*Himantodes lentiferus*, Cope, redescribed by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 15, fig.  
*Leptodira werneri*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 281, Usambara, German East Africa.  
*Rhinostoma guianense*, Trosch., described and figured by BOCOURT, Miss. Sc. Mex., Rept. p. 846, pl. lxvi, fig. 3.  
*Phimophis guerini*, D. & B., p. 848, pl. lxvi, fig. 4, and *coronata*, Schn., p. 850, pls. lxvi, figg. 1 & 2, & lxviii, figg. 5 & 6, described and figured by BOCOURT, *op. cit.*  
*Oxyrhopus clelia*, Daud. Note by PERACCA, Boll. Mus. Torino, xii, No. 284, p. 6. On the eggs and embryo, GOELDI, Zool. Jahrb. Syst. x, p. 671, pl. xxvii, figg. 12-18; *O. clelia*, Daud., p. 853, pl. lxviii, figg. 1 & 2, *rusticus*, Cope, p. 855, pl. lxvi, fig. 5, and *petolarius*, L., p. 858, pl. lxviii, figg. 2-4, described and figured by BOCOURT, *op. cit.*; *O. proximus*, sp. n., *id. ibid.* p. 856, pl. lxvii, figg. 3 & 4, Guatemala. [= *Scolecophis scytalinus*, Cope, = *O. clelia*, Daud. REC.]  
*Tachymenis peruviana*, Wgm. Note on the variations: WERNER, Zool. Jahrb. Suppl. iv, p. 258.  
*Pseudotomodon*, g. n., allied to *Tomodon*, D. & B. KOSLOWSKY, Rev. Mus. La Plata, ii, p. 454; *P. mendozinus*, sp. n., *id. ibid.* p. 455, Mendoza. [= *Pelias trigonatus*, Leybold, *vide* Berg]; *P.*, g. n.; *P. crivellii*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 284, Las Chimbas, S. Luis, Argentina. [= *Pelias trigonatus*, Leybold, *vide* Berg.]  
*Philodryas borellii*, sp. n., PERACCA, *t. c.* No. 274, p. 14, Salta, Argentina.  
*Psammophis schokari*, Forsk. Note on a Tunisian specimen: WERNER, Verh. Ges. Wien, xlvii, p. 407.  
*Oxybelis acuminatus*, Wied, p. 838, pl. lxv, fig. 4, *fulgidus*, Daud., p. 840, pl. lxv, fig. 5, and *argenteus*, Daud., p. 842, pl. lxv, fig. 2, described and figured by BOCOURT, Miss. Sc. Mex. Rept.  
*Apostolepis nigriceps*, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 207, fig., S. Paulo, Brazil.  
*Polemon bocourti*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 54, and Bull. Soc. Philom. (8) ix, p. 13, Lambarene, Gaboon.  
*Macrelaps microlepidotus*, Gthr. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375.  
*Aparallactus ubangensis*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 279, fig., Ubangi, Congo Free State; *A. niger*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 154, Sierra Leone; *A. peraffinis*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 404, pl. ii, fig. 3, Cameroon, W. Africa.

### *Proteroglypha.*

- Boulengerina*, Dollo. *Naia annulata*, Ptrs. belongs to this genus: MOCQUARD, Bull. Soc. Philom. (8) ix, p. 14; *B. dybowskii*, sp. n., *id. ibid.* p. 15, Bangui, French Congo.

- Elapechis sundevallii*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375; *E. mæbysi*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 400, Togoland, W. Africa.
- Bungarus sindanus*, sp. n., BOULENGER, J. Bombay Soc. xi, p. 73, pl. —, Sind.
- Naja haje*, L. Notes on the habits in Tunisia: THILENIUS, Zool. Jahrb. Syst. x, p. 221; *N. nigricollis*, Rhdt. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375; *N. guentheri*, Blgr., recorded from Sierra Leone by BOULENGER, Ann. Nat. Hist. (6) xix, p. 154.
- Elaps hertwigii*, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 208, Central America.
- Dendraspis angusticeps*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 376.

## AMBLYCEPHALIDÆ.

- Leptognathus pratti*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 523, Andes of Colombia.

## VIPERIDÆ.

- Vipera berus*, L. Note on its distribution in Transylvania: KIMAKOVICZ, Verh. Siebenb. Ver. xlv, p. 102. Criticism of the latter note by H. v. MÉHELY, Zool. Anz. xx, p. 434. On a bicephalous specimen: H. BORGERT, Verh. Ver. Hamb. (3) iv, p. 50, figg.
- Eristicophis*, g.n., intermediate between *Vipera* and *Cerastes*, for *E. macmahonii*, sp. n., ALCOCK & FINN, J. Asiat. Soc. Beng. lxxv, ii, p. 564, pl. xv, N. Baluchistan.
- Cerastes cornutus*, L. Notes on the habits: THILENIUS, Zool. Jahrb. Syst. x, p. 223.
- Atheris squamiger*, Hallow. Note by BOULENGER, Ann. Nat. Hist. (6) xix, p. 280; Note by WERNER, Verh. Ges. Wien, xlvii, p. 401; *A. ceratophorus*, Wern., recorded from Togoland, W. Africa; *id. ibid.*
- Atractaspis reticulata*, Sjöst., described and figured by SJÖSTEDT, Bih. Svenska Ak. Handl. xxiii, Pt. IV, No. 2, p. 28, pl. i, fig. 1, & pl. iii; *A. bouleengeri*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 54, and Bull. Soc. Philom. (8) ix, p. 16, Lambarene, Gaboon; *A. matschiensis*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 404, pl. ii, fig. 1, Cameroon, W. Africa.
- Sistrurus catenatus*, Raf. On its habits in confinement; P. SELOUS, Bull. Soc. zool. France, xxii, pp. 157 & 187.
- Ancistrodon hypnale*, Merr. Note by MÉHELY, Termes. Fuzetek, xx, p. 64.
- Lachesis microphthalmus*, Cope. Note by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 20; *L. vagleri*, Boie. A variety from Celebes figured by BOULENGER, P. Z. S. 1897, pl. xv, fig. 2.

## ORNITHOSAURIA.

- Ornithostoma ingens*, Marsh. Restoration by WILLISTON, Kansas Quart. vi, p. 35, pl. ii.

## DINOSAURIA.

- O. C. MARSH, Amer. J. Sci. (4) iv, pp. 413-416, remarks on Dinosaur-remains recently inspected by him in various European Museums.

- Remarks on the supposed relationship of Birds and Dinosaurs: GADOW, P. Cambridge Soc. ix, pp. 204-208.
- C. W. ANDREWS, Ann. Nat. Hist. (6) xix, pp. 585-591, fig. pl. xvi, describes and figures a cast of the brain-cavity of *Iguanodon*.
- Iguanodon bernissartensis*, Blgr. On the casts in the Cambridge Museum: HARMER, P. Cambridge Soc. ix, p. 202.
- On a Dinosaurian footprint from Molina de Aragon, Spain: CALDERON, Act. Soc. Espan. 1897, p. 27.

## EMYDOSAURIA.

- Caiman sclerops*, Schn. Notes on the life-history: GOELDI, Zool. Jahrb. Syst. x, p. 653, fig. pl. xxvii, fig. 19.
- Tomistoma lyceensis*, Costa (foss.). Description and figures of remains from the miocene of Lecce, Italy: P. ALDINIO, Atti Acc. Gioen. (4) ix, No. 15, 2 pls. Remarks by CAPELLINI, Riv. ital. Pal. iii, p. 18.
- A. BIGOT continues his studies of *Steneosaurus* and *Metriorhynchus* remains from the Jurassic Beds of Normandy. Bull. Soc. Normand. (4) x, p. 123.

## CHELONIA.

- F. SIEBENROCK, SB. Ak. Wien, cvi, i, pp. 245-328, 6 pls. gives an account of the structure of the skull in the principal groups of Chelonians.
- E. C. CASE, J. Morphol. xiv, pp. 21-56, discusses the relationships of the various types of marine Turtles.
- L. PLATE, SB. Ges. naturf. Berlin, 1897, pp. 85-89, makes observations on the digestive tract and cloaca of a female *Chelone mydas*.
- SUSANNA P. GAGE, Tr. Amer. Micr. Soc. xviii, pp. 282-286, investigates the brain of the embryo of *Trionyx*.
- K. MITSUKURI, J. Coll. Sci. Japan, x, 1896, pp. 1-118, pls. i-xi, writes on the early development of Chelonia.
- Podocnemis expansa*, Schw. and *dumeriliana*, Schw. Notes on the life-histories: GOELDI, Zool. Jahrb. Syst. x, pp. 660 & 664, pl. xxvi, figg. 8 & 9.
- Testudo polyphemus*, Daud. On its burrows: SCHNEE, Zool. Garten, xxxviii, p. 275.
- Testudo gigantea*, Schw. = *elephantina*, D. & B. Further notes by ROTHSCCHILD, Nov. Zool. iv, p. 407; *T. daudinii*, D. & B., noticed and figured from life, *id. ibid.* pl. xiii; *T. græca*, L. On the habits in confinement, E. BUCK, Zool. Garten, xxxviii, p. 293. M. JACQUET remarks on an accidentally injured specimen, Bull. Soc. Bucarest, p. 364, figg.; *T. zarudnyi*, Nik. described and figured by NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 307, pl. xvii.
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- Liemys*, g. n., combining characters of *Ocadia*, Gray, and *Bellia*, Gray, BOULENGER, Ann. Nat. Hist. (6) xix, p. 468; *L. inornata*, sp. n., *id. ibid.* p. 469, Sarawak [= *Brookeia baileyi*, Bartl.—REC.]
- Adelochelys crassa*, Baur = *Liemys inornata*, Blgr., SIEBENROCK, SB. Ak. Wien, cvi, i, p. 248.
- Malacoclemmys terrapin*, Schæpf, recorded from Massachusetts by O. BANGS, P. Boston Soc. xxvii, 1896, p. 159.
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- Protostega*, Cope (foss.). Description of various remains: E. C. CASE, J. Morphol. xiv, pp. 21-56, figg. pls. iv-vi.
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## ICHTHYOSAURIA.

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- Pliosaurus ferox*, Sauv. On the structure of the skull: C. W. ANDREWS, Quart. J. Geol. Soc. liii, p. 177, pl. xii.
- Cimoliosaurus leucoscopus*, sp. n., ETHERIDGE, JUNR, Rec. Austral. Mus. iii, p. 24, pls. v-vii, Upper Cretaceous, South Australia.
- Nothosaurus blezingeri*, *ichthyospondylus*, and *chelydrops*, spp. nn., FRAAS, Schwab. Trias-Saur. pp. 11 & 12, figg. pl. iv, Trias of Souabia.
- Simosaurus gaillardoti*, H. v. Mey. Skull figured by FRAAS, *op. cit.* pl. iii.
- Neusticosaurus pygmaeus*, sp. n., FRAAS, *op. cit.* p. 13, fig., Trias of Souabia.
- Psephosaurus*, g. n., near *Psephoderma*, for dermal scutes referred to the *Nothosauria*; *P. suevicus*, sp. n., FRAAS, l. c. p. 13, fig., Trias of Sonabia.
- Stereosternum tumidum*, Cope. On a new specimen from S. Paulo, Brazil: A. S. WOODWARD, Geol. Mag. (2) Dec. iv, iv, p. 145, pl. v.

## PLACODONTIA.

- Placodus duplicatus*, sp. n., FRAAS, Schwab. Trias-Saur. p. 14, fig., Trias of Souabia.

## THECODONTIA.

- Mystriosuchus*, g. n., for *Belodon planirostris*, H. v. Mey. FRAAS, Schwab. Trias-Saur. p. 16; *M. planirostris*, H. v. Mey. Skull figured, *id. ibid.* pl. v.
- Belodon kappfi*, H. v. Mey. Skull figured by FRAAS, *op. cit.* pl. v.
- Aetosaurus ferratus*, FRAAS, figured, *id. ibid.* pl. vi.

## RHYNCHOCEPHALIA.

- Sphenodon punctatus*, Gray. Notes on the anatomy: DUGES, Mem. Soc. Ant. Alzate, x, pp. 393-396, pl. xxiv.
- Dimetrodon incisivus*, Cope (foss.). Notes on the skull and a cast of the brain-cavity: E. C. CASE, Amer. J. Sci. (4) iii, p. 321, figg.
- G. BAUR & E. C. CASE, Anat. Anz. xiii, pp. 109-120, figg., describe the skull of *Dimetrodon* and regard the Pelycosauria as nearest related to the Rhynchocephalia and Proganosauria.

- Isodectes punctulatus*, Cope (foss.). Description and figure of a specimen from Linton, Ohio: COPE, P. Amer. Phil. Soc. xxxvi, p. 88, pl. iii, fig. 3.
- Otocelidæ*. A new family of Cotylosauria, established by Cope, P. Amer. Phil. Soc. xxxv, p. 123, for *Otocalus*, Cope, and *Conodectes*. Remarks are made by the same author on the *Diadectidæ*, and a synopsis of the genera given, p. 131.
- Otocalus testudinæus*, Cope, figured by COPE, *l. c.* pls. vii & viii; *O. mimeticus*, sp. n., *id. ibid.* p. 128, pl. ix, Permian, Texas.
- Conodectes*, g. n., allied to *Otocalus*, for *C. favosus*, sp. n., *id. ibid.* p. 129, pl. ix.
- Diadectes biculminatus* and *sideropelicus*, spp. nn., COPE, *t. c.* pp. 132 & 133, Permian, Texas.
- Bolbodon*, g. n., allied to *Diadectes*, for *B. tenuitectus*, sp. n., COPE, *t. c.* p. 134, Permian, Texas.
- Pariotichus aduncus*, sp. n., COPE, *t. c.* p. 135, Permian, Texas.
- Trimerorhachis conangulus*, sp. n., COPE, *t. c.* p. 137, Permian, Texas.

## ANOMODONTIA.

- H. E. OSBORN remarks on the dentition of certain Upper Triassic Reptiles of South Africa which are regarded as upon the border line between Reptiles and Mammals. *Science* (2) v, p. 576.
- R. BROOM, *J. Anat. Physiol. norm. path.* (2) xi, pp. 277-279, remarks on the interpretation to be given to the anterior elements of the palate in *Gomphognathus*.
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## BATRACHIA.

- On the proper name to use for this Class: G. BAUR, *Science* (2) vi, pp. 170, 372; B. G. WILDER, *t. c.* p. 295; J. GILL, *t. c.* p. 446; O. P. HAY, *t. c.* p. 773.
- G. M. WINSLOW, *Bull. Essex Inst.* xxviii, pp. 87-121, 3 pls., studies the chondrocranium in the principal types of Batrachians.
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- W. G. RIDWOOD, P. Z. S. 1897, pp. 577-595, pl. xxxv, describes the structure and development of the hyobranchial skeleton of *Pelodytes punctatus*.
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## PHANEROGLOSSA.

## RANIDÆ.

*Rana macrodon*, Kuhl, described and figured by S. S. FLOWER, P. Z. S. 1896, p. 898, pl. xlv, fig. 1; *R. schusteri*, Werner, = *R. tigrina*, Daud.

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## V. PISCES.

BY

G. A. BOULENGER, F.R.S.

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## II. GENERAL SUBJECT.

- LAVOCAT, Mem. Ac. Toulouse (9) ix, pp. 138-154, has a general paper on the structure and organisation of Fishes, recent and fossil.
- J. T. CUNNINGHAM, Sci. progress (2) i, pp. 491-505, in an article on "recapitulation," makes remarks on the phylogeny of various groups of Fishes.
- S. H. REYNOLDS, in his Manual "The Vertebrate Skeleton" (Cambridge, 8vo), deals with the Fishes, pp. 50-132.
- G. M. WINSLOW, Bull. Essex Inst. xxviii, pp. 122-138, 1 pl., studies the chondrocranium in *Polypterus*, *Salmo*, and *Protopterus*.
- O. P. HAY, Zool. Bull. i, pp. 131-141, criticises Gadow and Abbott's memoir on the vertebral column of Fishes.
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- C. EMERY, Anat. Anz. xiii, pp. 137-149, remarks on the crossopterygium and its relations to other types of limbs in higher vertebrates.
- D. A. WIKSTRÖM, Anat. Anz. xiii, pp. 401-408, writes on the innervation and structure of the myomeres of the trunk in Cyclostomes and Selachians.
- H. V. NEAL, Anat. Anz. xiii, pp. 441-463, figg., writes on the development of the hypoglossus musculature in *Petromyzon* and *Squalus*.
- J. F. HOLM, Zool. Jahrb. Anat. x, pp. 277-286, pls. xxiv & xxv, writes on the histological structure of the liver in the lower Fishes.
- S. VINCENT, Tr. Z. S. xiv, pp. 41-84, pls. ix-xvii, and Anat. Anz. xiii, pp. 39-48, writes on the suprarenal bodies in Fishes, and their relation to the so-called head-kidney.
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M. FÜRBRINGER, Gegenbaur Festschrift, iii, pp. 349-788, figg., 8 pls., writes on the spino-occipital nerves in Selachians and Holocephalians.

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V. HENSEN & C. APSTEIN, Wiss. Meeresunters. ii, Heft 2, pp. 1-97, pls. i-xx, report on the biological results of the German North Sea Expedition, 1895, dealing chiefly with statistics on the number of Fish-eggs and larvæ.

C. ISHIKAWA & K. MATSUURA publish a list of the Fishes preserved in the Tokyo Museum (Tokyo: 1897).

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#### EUROPE.

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*Norway.* On the species added to the list of Norwegian Fishes from 1880 to 1896: COLLETT, Arch. Naturv. Christian. xix, No. 8, 25 pp.

*Denmark.* A. S. JENSEN continues the account of the Fishes in H. J. HANSEN's Zoologia Danica, Pt. 10, pp. 127-178, pls. xiv-xviii.

*France.* H. GADEAU DE KERVILLE's "Faune de Normandie," Part iv, contains an account of the Fishes of Normandy. On the Fishes of the Dept. Allier: E. OLIVIER, Rev. Sci. Bourbonnaise, x, pp. 177-199. On those of Auvergne: L. DUCHASSEINT, *l. c.* pp. 205-216. R. VILLATTE gives a list of the Fishes of Montluçon. Faune Arrond. Montluçon. (Montluçon: 1897, 16mo.)

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*New York.* T. H. BEAN has systematic and biological notes upon New York Fishes received at the New York Aquarium, 1895-1897. *Bull. Amer. Mus.* ix, pp. 327-375.

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*Arizona.* On a collection of Fishes from the Colorado Basin: C. H. GILBERT & N. B. SCOFIELD, P. U. S. Mus. xx, pp. 487-499, pls. xxxvi-xxxix.

*Central America.* On the ichthyological fauna of the Chagres River: VAILLANT, Bull. Mus. Paris, 1897, pp. 220-223.

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*Brazil.* H. v. IHERING, Revist. Mus. Paulista, ii, pp. 25-63, gives a list of the Marine Fishes of the State of Rio Grande do Sul.

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## AUSTRALIA AND POLYNESIA.

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*Polynesia.* On the Fishes obtained at Funafuti: WAITE, Mem. Austral. Mus. iii, pp. 181-201, pl. viii. List of Fishes collected by Mr J. S. Gardiner on Rotuma Is.: BOULENGER, Ann. Nat. Hist. (6) xx, pp. 371-374.

## FOSSIL FAUNÆ.

R. H. TRAQUAIR, P. Geol. Ass. xv, pp. 143-145, gives a list of the fossil Fish-remains occurring in the Carboniferous bone bed at Abden, near Kinghorne, Fifeshire.

A. BIGOT, Bull. Soc. Linn. Normand. (4) x, pp. 7-13, enumerates the Selachian remains known from the Departments Calvados and Orne, Normandy.

F. PRIEM, Bull. Soc. Geol. France (3) xxv, pp. 40-56, pl. i, writes on Elasmobranch teeth from various Senonian beds in France.

G. DE ALESSANDRI, Mem. Mus. Milano, vi, No. 1, pp. 25-42, 2 pls., enumerates the fossil Fishes of the Miocene "Pietra da Cantoni" Beds of Rosignano and Vignale, Italy.

A. CARRAROLI, Riv. ital. Pal. iii, pp. 23-27, 1 pl., writes on the Pliocene Fishes of the districts of Parma and Piacenza.

E. D. COPE, P. Amer. Phil. Soc. xxxvi, pp. 71-82, pls. i, ii, describes N. American Fish-remains from the Catskill and Coal Measure epochs.

## IV. REFERENCES ARRANGED SYSTEMATICALLY.

## TELEOSTOMI.

## TELEOSTEI.

- O. THILO, Verh. Ges. deutsch. Naturf. lxxviii, pp. 171-176, writes on the spines of the fins of Fishes. Remarks by W. SÖRENSEN, Morphol. Jahrb. xxv, pp. 170-189.
- L. HAMMERLE, Ber. Ges. Freiburg, x, pp. 20-32, investigates the anatomical structure of the pectoral fins of *Periophthalmus koelreuteri*.
- A. ANDRES, Rend. Ist. Lombardo (2) xxx, pp. 1123-1139, 2 pls., writes on the intermuscular bones (myospines) on *Tinca vulgaris*.
- K. FRANZ, Morphol. Jahrb. xxv, pp. 143-155, figg., pl. ix, writes on the development of the hypochorda of Teleosteans.
- E. FRIEDMANN, Morphol. Arbeit. vii, pp. 546-582, figg., writes on the development of teeth in Teleosteans.
- G. A. HAUS, Int. J. Anat. xiv, pp. 42-51, pl. v, makes an anatomical and histological investigation of the digestive tract of *Anarrhichas lupus*.
- J. T. CUNNINGHAM, Quart. J. Micr. Sci. xl, pp. 101-163, pls. ii-iv, writes on the histology of the ovary and of the ovarian ova in certain marine Teleostians.
- A. F. DE SEABRA, Bull. Mus. Paris, 1897, pp. 217-220, has a preliminary note on the so-called red bodies of Teleosteans.
- O. AICHEI, SB. Ges. Munchen, xi, pp. 73-78, fig., has a communication on the histological structure of the olfactory mucous membrane of embryonic Teleosteans.
- A. G. H. GENDEREN STORT, Versl. Ak. Amsterdam, 1897, pp. 425-428, remarks on some points in the structure of the retina of *Leuciscus rutilus*.
- J. HERRICK, Anat. Anz. xiii, pp. 425-431, writes on the cranial nerve compounds of Teleosteans.
- N. GORONOWITSCH, Gegenbaur Festschrift, iii, pp. 1-42, 2 pls., writes on the trigemino-facial complex in *Lota vulgaris*.
- S. CALANDRUCCIO, Atti Acc. Gioen. (4) x, No. 2, writes on the lateral branch of the trigeminal nerve in the Mediterranean Murænoids.
- B. HALLER, Gegenbaur Festschrift, iii, pp. 45-100, fig., 4 pls., writes on the origin of the vagus nerves in Teleosteans.
- U. DAHLGREN, Anat. Anz. xiii, pp. 281-293, figg., has a preliminary article on the giant ganglion cells in the spinal cord of the Pleuronectoids.
- F. S. BUNKER, Anat. Anz. xiii, pp. 256-260, writes on the structure of the sensory organs of the lateral line in the Siluroid *Amiurus nebulosus*.
- H. STAHR, Biol. Centralbl. xvii, pp. 273-282, writes on the function of the lateral line, his observations being based on *Polyacanthus viridi-auratus*.
- H. V. WILSON & J. E. MATTOCKS, Anat. Anz. xiii, pp. 658-660, figg., write on the lateral sensory 'Anlage' in the Salmon.
- E. BALLOWITZ, Anat. Anz. xiii, pp. 643-648, figg., has notes on the histology of the electric organ of *Gymnotus*.
- MCINTOSH & MASTERMAN'S "Life-histories of the British Marine Food-Fishes" (London: 1897, 8vo.) deals with the habits and development of Teleosteans and is intended to constitute an epitome of the results achieved at the St. Andrews Marine Laboratory and elsewhere.
- W. C. MCINTOSH, Rep. Fish. Board Scotland, xv, Pt. III, pp. 194-211, pls. v-vii, continues to report on the life-histories and development of Scottish Marine Fishes.

- A. T. MASTERMAN, Nat. Sci. x, pp. 382-392, figg., writes on some effects of pelagic spawning-habit on the life-histories of Teleosteans.
- A. T. MASTERMAN, Rep. Fish. Board Scotland, xv, Pt. III, pp. 246-261, reviews the work of the 'Garland' in connection with the pelagic eggs of the food-fishes.
- H. M. KYLE, Rep. Fish. Board Scotland, xv, Pt. III, pp. 246-261, reports on the pelagic ova, larvæ, and young fishes procured by the 'Garland' in 1896.
- FABRE-DOUMERGUE & BIÉTRIX, Ann. Sci. Nat. (8) iii, pp. 151-220, figg., have notes on the eggs and larvæ of some Fishes from the Atlantic Coast of Brittany.
- FABRE-DOUMERGUE & BIÉTRIX, Bull. Mus. Paris, 1897, pp. 57 & 58, write on the critical post-larval period in marine Teleosteans, and add considerations from the practical point of view as to artificial rearing of embryos.
- F. W. SEELIG, Abh. Ver. Kassel, lxi, pp. 38-46, writes on artificial fecundation and rearing of fish-ova.
- A. E. VERRILL, Amer. J. Sci. (4) iii, pp. 135 & 136, writes on nocturnal and diurnal changes in the colours of certain Teleostean Fishes, with notes on their sleeping habits.

## ACANTHOPTERYGII.

### PERCIDÆ.

- Lucioperca volgensis*, Pall., recorded from Croatia by MOJO, Rad Jugoslav. Ak. cxix, 1896, p. 84.
- Percina caprodes*, Raf. Further notes on variations: MOENKHAUS, P. Indiana Ac. 1895, p. 278 [1896]; *P. aspro*, Cope & Jord. Notes on variations: MOENKHAUS, t. c. p. 161 [1896].
- Boleosoma nigrum*, Raf. Notes on variations: MOENKHAUS, l. c. p. 161.
- Acerina cernua*, L., figured, with notes on its occurrence in the lower Loire. E. MARCHAND, Bull. Soc. Ouest France, vii, p. 151, pl. iv. Notes on Croatian specimens: MOJO, t. c. p. 84, fig. On variations in the fin-rays: DUNKER, Biol. Centralbl. xvii, pp. 785 & 815.

### SERRANIDÆ.

- Epinephelus niphobles*, sp. n., GILBERT (& STARKS). P. U. S. Mus. xix, p. 442, Magdalena Bay, Lower California.
- Mycteroperca hopkinsi*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 105, Jamaica.
- Dules diaphylurus*, Gthr. Note by JORDAN & RUTTER, t. c. p. 106.
- Anthias townsendi*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 420, Mekran Coast, Persia.
- Lobotes surinamensis*, Bl., described by JORDAN & RUTTER, t. c. p. 112.

### PRISTIPOMATIDÆ.

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- Brachydeuterus corvinaformis*, Sldr., described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 110.
- Orthopristis forbesi*, sp. n. (JORDAN & STARKS) GILBERT, P. U. S. Mus. xix, p. 443, Albemarle, Galapagos Archipelago.

## SQUAMIPINNES.

*Holacanthus iodocus*, sp. n. (JORDAN & RUTTER) GILBERT, P. U. S. Mus. xix, p. 445, Galapagos Archipelago.

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## MULLIDÆ.

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## SPARIDÆ.

*Dentex gibbosus*, Raf. Note by PERUGIA, Ann. Mus. Genova (2) xviii, p. 137.

## SCORPÆNIDÆ.

*Sebastes maderensis*, C. & V. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 4.

*Sebastodes semicinctus*, p. 449, pl. liii, fig. 1, Sta. Barbara Channel, California, *ayresii*, p. 450, Cortez Banks, California, and *crameri* (JORDAN), p. 451, off Tillamook, Oregon, spp. nn., GILBERT, *t. c.*

*Scorpana pannosa*, sp. n. (CRAMER) GILBERT, P. U. S. Mus. xix, p. 446, pl. lii, Panama.

## BERYCIDÆ.

*Myripristis clarionensis*, sp. n., GILBERT, P. U. S. Mus. xix, p. 441, pl. lxix, Clarion Is., Mexico.

*Holocentrum marianum*, C. & V., described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 99.

## SCIÆNIDÆ.

*Ophioscion strabo*, sp. n., GILBERT, P. U. S. Mus. xix, p. 444, pl. l, S. Juan Lagoon, Sonora, Mexico.

*Cynoscion jamaicensis*, Vaill. & Bocourt, described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 114.

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*Nebris occidentalis*, sp. n., VAILLANT, Bull. Mus. Paris, 1897, p. 124, Pacific Coast of Central America.

## ANOMALOPIDÆ.

*Anomalops palpebratus*, Bodd. Note by REUVENS, Notes Leyden Mus. xix, p. 127.

## TRICHIURIDÆ.

*Trichiurus lepturus*, L. On specimens from the Atlantic coast of Brittany: VAILLANT, Bull. Mus. Paris, 1897, p. 166.

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*Caranx trachurus*, L. (?). On a very young stage: McINTOSH, Rep. Fish. Board Scotland, xv, Pt. iii, p. 206.

- Seriola lalandii*, C. & V. Note by BEAN, Bull. Amer. Mus. ix, p. 360.  
*Psettus fulciiformis*, Lacép., described by M. WEBER, Zool. Jahrb. Syst. x, p. 142.  
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*Chloroscombrus ectenurus*, sp. n., JORDAN & RUTTER, *t. c.* p. 101, Jamaica.  
*Trachynotus rhomboides*, Bl., described by JORDAN & RUTTER, *t. c.* p. 103.  
*Capros aper*, L. On the ova and larvæ: HOLT, J. Mar. Biol. Ass. (2) v, p. 41.

## CORYPHÆNIDÆ.

- Lampris luna*, Risso, recorded from Tasmania by A. MORTON, P. Soc. Tasmania, 1896 (1897), p. 99.

## SCOMBRIDÆ.

- Scomber scombrus*, L. A review of the present state of our knowledge of the habits and migration: E. J. ALLEN, J. Mar. Biol. Ass. (2) v, p. 1; *S. colias*, Gm., and *microlepidotus*, Rüpp., figured by KITAHARA, Journ. Fish. Bur. Tokyo, vi, pl. iv, fig. 8 and pl. iii, fig. 5.  
*Thynnus thynnus*, L., *sibi*, Temm. & Schleg., *germo*, Lacép., *macropterus*, Temm. & Schleg., *thunnina*, C. & V., and *pelamys*, L., figured by KITAHARA, *t. c.* pls. i-iii.  
*Pelamys chilensis*, C. & V., figured by KITAHARA, *t. c.* pl. iv, fig. 10.  
*Cybius niphonium*, C. & V., figured by KITAHARA, *t. c.* pl. iv, fig. 11.  
*Acanthocybium solandri*, C. & V. Note by BOULENGER, P. Z. S. 1897, p. 272.  
*Pterycombus brama*, Fries, redescribed and figured by COLLETT, Bergens Mus. Aarbog, 1896, No. vi, 2 pls.  
*Auvis rochei*, Risso, figured by KITAHARA, *t. c.* pl. iv, fig. 9.  
*Echeneis albescens*, Temm. and Schleg. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 5.

## TRACHINIDÆ.

- Astroscompus zephyreus*, sp. n., GILBERT (& STARKS), P. U. S. Mus. xix, p. 453, pls. liii, fig. 2, and liv, Magdalena Bay, Lower California.  
*Pseudochromis nigrovittatus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 421, Mekran Coast, Persia.

## BATRACHIDÆ.

- Batrachus argentinus*, sp. n., BERG, An. Mus. Buenos Ayres, v, p. 300, Mouth of the Plate River.

## PEDICULATI.

- Antennarius mitchellii*, sp. n., A. MORTON, P. Soc. Tasmania, 1896 (1897), p. 98, Tasmania.

## COTTIDÆ.

- Prionotus loxias*, sp. n. (JORDAN) GILBERT, P. U. S. Mus. xix, p. 452, Bay of Panama.  
*Pterois ellioti*, sp. n., MEEK, Publ. Field Mus. Zool. i, p. 169, pl. xl, Coast of Somaliland [= *P. antennata*, Rüpp.—REC.].  
*Cottus scorpius*, L. On the life-history: MCINTOSH, Ann. Nat. Hist. (6) xix, p. 256; *C. sibiricus*, Kessl., described and figured by WARPACHOWSKI, Annuaire Mus. St. Petersb. 1897, p. 249, pl. xi, fig. 6.

## CATAPHRACTI.

- T. GILL, Science (2) vi, p. 958, points out that the type of *Percis*, Scopoli, is *Cottus japonicus*, Pall. The genus is made the type of a new Subfamily, *Percidinæ*, to include also *Agonomalus* and *Hypsagonus*.

## DISCOBOLI.

- Cyclopterus lumpus*, L. On the life-history: MCINTOSH, Ann. Nat. Hist. (6) xix, p. 245; *C. (Eumicrotremus) spinosus*, Müll. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 7.

## GOBIIDÆ.

- Gobius jeffreysii*, Gthr., recorded from the Plymouth District by HOLT, J. Mar. Biol. Ass. (2) v, p. 89; *G. marmoratus*, Pall., recorded from Croatia by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, p. 87, fig.; *G. gymnauchen*, n. n. for *G. nudiceps*, Blkr. nec C. & V., M. WEBER, Zool. Jahrb. Syst. x, p. 144; *G. dewaali*, sp. n., *id. ibid.* p. 145, Interior of Natal; *G. giurinus*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 86, Swatow, China; *G. sarasinorum* and *latifrons*, spp. nn., BOULENGER, P. Z. S. 1897, p. 427, pl. xxviii, figg. 1 & 2, Celebes; *G. townsendi*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 421, Mekran Coast, Persia. *Prionobutis serrifrons*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 84, Swatow, China. *Aphia pellucida*, Nardo. Further notes on its occurrence in the Plymouth District: HOLT, J. Mar. Biol. Ass. (2) v, p. 89. *Gillichthys detrusus*, sp. n., GILBERT & SCOFIELD, P. U. S. Mus. xx, p. 498, pl. xxxviii, Mouth of Colorado River, Mexico. *Eleotris*, Gron. List of the Australian species: DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxi, p. 752. *Carassiops*, g. n., for *Eleotris compressus*, Krefft, DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxi, p. 732; *C. longi*, sp. n., *id. ibid.* p. 733, New South Wales. *Kreffti*, g. n., for *Eleotris australis*, Krefft, which is described; DOUGLAS-OGILBY, *t. c.* p. 736. *Mulgoa*, g. n., for *Eleotris coxii*, Krefft, which is described; DOUGLAS-OGILBY, *t. c.* p. 740. *Ophiorrhinus*, g. n., for *Eleotris grandiceps*, Krefft, and *E. nudiceps*, Casteln., which are described; DOUGLAS-OGILBY, *t. c.* p. 745. *Callionymus maculatus*, Bp., recorded from Falmouth Bay by HOLT, J. Mar. Biol. Ass. (2) v, p. 90.

## BLENNIIDÆ.

- Emmion*, g. n., remotely allied to *Labrosomus* and *Pseudoblennius*, for *E. bristolæ*, sp. n. (JORDAN) GILBERT, P. U. S. Mus. xix, p. 454, Galapagos Archipelago. *Emblemaria oculocirris*, sp. n. (JORDAN) GILBERT, *t. c.* p. 456, La Paz, California. *Salarias curtus* and *phantasticus*, spp. nn., BOULENGER, Ann. Nat. Hist. (6) xx, p. 422, Mekran Coast, Persia. *Tripterygium melanurum*, Guich.: note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 11. *Ulvicola*, g. n., allied to *Xerpes*, for *U. sanctæ-rosæ*, sp. n., GILBERT (& STARKS), *t. c.* p. 455, Sta Rosa Is., California. *Opisthocentrus tenuis*, sp. n., T. H. & B. A. BEAN, P. U. S. Mus. xx, p. 463, pl. xxxv, Vulcano Bay, Japan.



## ATHERINIDÆ.

*Telmatherina*, g. n., allied to *Atherina*, but distinguished by the more strongly compressed body, the absence of a silvery lateral band, and the smaller number of vertebrae; *T. celebensis*, sp. n., BOULENGER, P. Z. S. 1897, p. 428, pl. xxviii, fig. 3, Celebes.

## MUGILIDÆ.

*Mugil hypselosoma* and *georgii*, spp. nn., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, pp. 74 & 77, Coast of New South Wales.  
*Cestrus norfolcensis*, sp. n., DOUGLAS-OGILBY, t. c. p. 80, Norfolk Is.  
*Pseudomugil signifer*, Kner: note by DOUGLAS-OGILBY, t. c. p. 82.

## GASTROSTEIDÆ.

*Gastrosteus pungitius*, L.: observed to do well in salt water: H. O. FORBES, Bull. Liverp. Mus. i, p. 24.

## TEUTHIDIDÆ.

*Xesurus clarionis*, sp. n., GILBERT (& STARKS), P. U. S. Mus. xix, p. 445, pl. li, Clarion Is., Mexico.

## GOBIESOCIDÆ.

*Lepadogaster bimaculatus*, Penn. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 13. On the eggs and young: MCINTOSH, Ann. Nat. Hist. (6) xix, p. 252.

## LOPHOTIDÆ.

*Lophotes*, sp. -? On a specimen found on the coast of Taranaki, New Zealand; F. E. CLARKE, Tr. N. Zealand Inst. xxix, p. 251, pl. xvi.

## NOTACANTHIDÆ.

*Macdonaldia alta* and *longa*, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, p. 232, Bering Sea, 900-1401 faths.

## ACANTHOPTERYGII PHARYNGOGNATHI.

## POMACENTRIDÆ.

*Eupomacentrus diencæus*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 116, Jamaica.  
*Chromis multilineatus*, Guich., described by JORDAN & RUTTER, t. c. p. 117.  
*Pomacanthus paru*, Bl., described by JORDAN & RUTTER, t. c. p. 124.  
*Pomacentrus jordani*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 77, Swatow, China.  
*Angelichthys ciliaris*, L., described by JORDAN & RUTTER, t. c. p. 125.

## LABRIDÆ.

*Crenilabrus cæruleus*, Risso. Note by PERUGIA, Ann. Mus. Genova (2) xviii, p. 139.

- Odax attenuatus*, sp. n., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 83, Tasmania.  
*Scarus emblematicus*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 122, Jamaica.

## CHROMIDES.

- Chromis natalensis*, sp. n., M. WEBER, Zool. Jahrb. Syst. x, p. 147, Natal.—  
*C. (Ctenochromis) philander*, sp. n., *id. ibid.* p. 148, Natal; *C. auratus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 155, L. Nyassa; *C. rendalli*, sp. n., BOULENGER, P. Z. S., 1896, p. 915, fig., Upper Shiré R.  
*Oreochromis shiranus*, sp. n., BOULENGER, *l. c.* p. 916, fig. Upper Shiré R.  
*Corematodus*, g. n., allied to *Chromis*, but both jaws with extremely broad bands of innumerable minute club-shaped teeth with compressed oblique entire crowns. BOULENGER, *l. c.* p. 918; *C. shiranus*, sp. n., *id. ibid.* p. 919, fig., Upper Shiré R.  
*Docimodus*, g. n., allied to *Chromis*, but both jaws with a very broad band of teeth, the outer large and entire, the others small and tricuspid; *D. johnstoni*, sp. n., BOULENGER, *l. c.* p. 917, fig., Upper Shiré R.  
*Pelmatochromis congcicus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 422, Upper Congo.  
*Heros fasciatus*, Strdr. Figured, with an account of its habits in the aquarium: E. BADE, Der Chanchito, Berlin: 1897, 8vo.; *H. gouldii*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 298, Cunani R., French Guiana.  
*Boggiana*, g. n., allied to *Crenicichla*, for *B. ocellata*, sp. n., PERUGIA. Ann. Mus. Genova (2) xviii, p. 148, Upper Paraguay.

## ANACANTHINI.

## LYCODIDÆ.

- Lycodes digitatus* and *concolor*, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, pp. 232, 233, Bering Sea, 49 & 276 faths.

## GADIDÆ.

- Gadus morrhua*, L., *æglefinus*, L., and *merlangus*, L. Notes on the life-histories: MCINTOSH, Rep. Fish. Board Scotland, xv, pt. iii, pp. 194, 196, 201, pls. v & vi; *G. pollachius*, L. On the eggs and young: MCINTOSH, Ann. Nat. Hist. (6) xix, p. 243; *G. esmarkii*, Nilss. Recorded from the Plymouth district by M. DUNN & E. W. L. HOLT, J. Mar. Biol. Ass. (2) v, p. 79.  
*Lepidion verscundum*, sp. n. (JORDAN & CRAMER) GILBERT, P. U. S. Mus. xix, p. 456, Clarion Island, Mexico.  
*Lota vulgaris*, Cuv. Note by MOJO, Rad Jugoslav. Ak. cxvi, 1896, p. 89.  
*Molva vulgaris*, Cuv. Note on the reproductive organs of a hermaphrodite specimen: H. M. KYLE, Rep. Fish. Board Scotland, xv, pt. iii, p. 396, pl. vii, figg. 3-5; *M. abyssorum*, Nilss., recorded from off Rona by G. SIM, Ann. Scott. Nat. Hist. 1897, p. 255.  
*Onos mustela*, L. On the post-larval and young stages: MCINTOSH, Rep. Fish. Board Scotland, xv, pt. iii, p. 206.  
*Raniceps raninus*, L. On the very young stages: MCINTOSH, Rep. Fish. Board Scotland, xv, pt. iii, p. 206.

## OPHIDIIDÆ.

- Diplacanthopoma rivers-andersoni*, Alcock, and *brachysoma*, Gthr., figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, figg. 1 & 2.  
*Dermatorus melampeplus*, Alcock, figured by ALCOCK, t. c. fig. 3.  
*Neobythites conjugator*, Alcock, figured by ALCOCK, t. c. fig. 4.  
*Dermatopsis macrodon*, D. Ogilb. Note by DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 86.  
*Monothrix*, g. n., allied to *Dinematichthys*, for *M. polylepis*, sp. n., DOUGLAS-OGILBY, t. c. p. 87, coast of New South Wales.  
*Austrophycis*, g. n., allied to *Physiculus*. DOUGLAS-OGILBY, t. c. p. 90;  
*A. megalops*, sp. n., *id. ibid.* p. 91, coast of New South Wales and Maroubra Bay.  
*Otophidium genyopus*, sp. n., DOUGLAS-OGILBY, t. c. p. 93, Maroubra Bay.  
*Cælorhynchus mortoni*, sp. n., DOUGLAS-OGILBY, P. Soc. Tasmania, 1896 (1897), p. 83, Tasmania.  
*Amodytes tobianus*, L. On the spawning: McINTOSH, Ann. Nat. Hist. (6) xix, p. 241.

## MACRURIDÆ.

- Macrurus lepturus*, p. 233, *dorsalis*, p. 233, and *firmisquamis*, p. 234, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, Bering Sea; *M. (Nematomurus) magnus* and *suborbitalis*, spp. nn., *id. ibid.* p. 234, Bering Sea.  
*Steindachnerella*, n. n. for *Steindachneria*, Goode & Bean *nec* Eigenm. EIGENMANN, Amer. Natural. xxxi, p. 159.

## PLEURONECTIDÆ.

- T. NISHIKAWA, Annot. Zool. Japon. i, p. 73, figg., describes the migration of the eye from the blind side in a Flat-fish embryo (*Plagusia* ?), observing that in every case the passage of the eye from one side to the other in Pleuronectoids is morphologically along the dorsal surface of the head.  
H. DANNEVIG, Rep. Fish. Board Scotland, xv, Pt. III, 175-193, pl. iv, writes on the rearing of larval and post-larval Pleuronectoids.  
*Hippoglossoides robustus*, sp. n., GILL & TOWNSEND, P. Soc. Washington, xi, p. 234, Bering Sea.  
*Hippoglossoides*, sp. ? , from Japan, figured by OTAKI, Journ. Fisheries Bur. Tokyo, vi, pl. v, fig. 1.  
*Phrynorhombus unimaculatus*, Risso. Note on the ova and larvæ, HOLT, J. Mar. Biol. Ass. (2) v, p. 45.  
*Arnoglossus laterna*, Walb. and *Grohmanni*, Gthr. Notes by HOLT, J. Mar. Biol. Ass. (2) v, pp. 48 & 89.  
*Pseudorhombus olivaceus*, Schleg., and *cinnamomeus*, Schleg., figured by OTAKI, t. c., pls. v, figg. 2 & 3.  
*Paralichthys æstuarius*, GILBERT & SCOFFIELD, P. U. S. Mus. xx, p. 499, pl. xxxix, Mouth of Colorado River, Mexico; *P. woolmani*, sp. n. (JORDAN & WILLIAMS) GILBERT, P. U. S. Mus. xix, p. 457, Galapagos Archipelago.  
*Pleuronectes platessa*, L. On the variations in specimens from different fishing grounds: J. T. CUNNINGHAM, J. Mar. Biol. Ass. (2) iv, p. 315. On the yearly immigration of young plaice into the Limfjord from the German Sea: PETERSEN, Rep. Dan. Biol. Stat. vi; *P. yokohamae*, Gthr., *scutifer*, Stdr., *stellatus*, Pall., *cynoglossus*, L., *asperimus*, Schleg., and *variegatus*, Schleg., figured by OTAKI, t. c. pls. vi & vii.  
*Parophrys cornuta*, Blkr., figured by OTAKI, t. c. pl. viii, fig. 10.

- Boopsetta umbrarum*, Alcock, figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, fig. 5.  
*Synaptura zebra*, C. & V., figured by OTAKI, t. c. pl. viii, fig. 11.  
*Cynoglossus joyneri*, Gthr., figured by OTAKI, t. c. pl. viii, fig. 12.

## PHYSOSTOMI.

## SILURIDÆ.

- L. VAILLANT, Rev. Sci. (4) vii, pp. 685-689, publishes a lecture on the distribution of the *Siluridæ* in space and time.  
*Clarias mossambicus*, Ptrs. Note by VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 25; *C. theodoræ*, sp. n., M. WEBER, Zool. Jahrb. Syst. x, p. 150, Natal.  
*Alia somalensis*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 346, Somaliland.  
*Pimelodus gracilis*, Val. Note by VAILLANT, Bull. Mus. Paris, 1897, p. 222.  
*Tachysurus liropus*, sp. n. (BRISTOL) GILBERT, P. U. S. Mus. xix, p. 438, S. Juan Lagoon, Sonora, Mexico.  
*Chimarrhoglanis*, g. n., allied to *Pimelodus*, VAILLANT, Bull. Mus. Paris, 1897, p. 81 [= *Anoplopterus*, Pfeff.—REC.]; *C. leroyi*, sp. n., *id. ibid.* p. 82, Mrogoro, Zanguebar, 2000 ft. [= *A. platychir*, Gthr.—REC.]  
*Arius pleuropis*, sp. n., BOULENGER, Ann. Nat. Hist. (6), xx, p. 296, Marajo Is., Brazil.  
*Netuma insularum*, sp. n. (GREENE) GILBERT, P. U. S. Mus. xix, p. 439, Galapagos Archipelago.  
*Doumea typica*, Sauvage. Note by VAILLANT, Bull. Mus. Paris, 1897, p. 82.  
*Synodontis zanzibaricus*, Ptrs., *leopardus*, Pfeff., and *serratus*, Rüpp. Notes by VINCIGUERRA, t. c. pp. 350 & 351. Synopsis of the Congo species : BOULENGER, Ann. Nat. Hist. (6) xx, p. 424; *S. pleuropis*, sp. n., *id. ibid.* p. 423, Upper Congo; *S. vaillanti*, n. n. for *S. labeo*, Vaill. nec Gthr., *id. ibid.* p. 424.  
*Malapterurus electricus*, Gm. On its habits in an aquarium : H. O. FORBES, Bull. Liverp. Mus. i, p. 25.  
*Plecotomus borellii*, sp. n., BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 2, Mission de S. Francisco, R. Pilcomayo, Bolivia.  
*Trichomycterus cordovensis*, Weyenb., redescribed by BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 2; *T. borellii*, sp. n., *id. ibid.* p. 3, Bolivian Chaco and Prov. Salta, Argentina.  
*Pygidium schmidtii*, p. 266, Catamarca, Argentina, *spequzzinii*, p. 267, Salta, Argentina, and *riojanum*, p. 269, Cordillera de La Rioja, Argentina, spp. nn., BERG, An. Mus. Buenos Ayres, v.

## SCOPELIDÆ.

- Bathypterois atricolor*, Alcock, figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, fig. 6.  
*Argyrolepis olfersii*, Cuv. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 14.  
*Scopelarchus guentheri*, Alcock, figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, fig. 7.

## CYPRINIDÆ.

- FACE, —, Schr. Ver. Schleswig-Holst. xi, pp. 84 & 85, remarks on the disposition of the pharyngeal teeth in the Cyprinoids of Schleswig-Holstein.

- Catostomus arizona*, sp. n., GILBERT & SCOFIELD, P. U. S. Mus. xx, pl. xxxvi, Arizona.
- Cyprinus carpio*, L. On a malformed specimen with completely closed mouth, being probably fed through the gill openings: P. SCHIEMENZ, SB. Ges. naturf. Berlin, 1897, p. 156.
- Labeo bottegii*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 358, Somaliland.
- Apistoma*, g. n., allied to *Aspiorrhynchus*, Kessl., but with 4 barbels. NIKOLSKY, t. c. p. 345; *A. zarudnyi*, sp. n., *id. ibid.* p. 346, Eastern Persia.
- Capoeta fusca, nudiventris*, and *gibbosa*, spp. nn., NIKOLSKY, Annuaire Mus. St. Petersb. 1897, pp. 340, 342, 344, Eastern Persia.
- Barbus*, Cuv. *Cyprinus aphyia*, Bloch, is founded on a species of this genus: HILGENDORF, SB. Ges. naturf. Berlin, 1897, p. 35; *B. albanicus*, Stdr., described and figured by STEINDACHNER, Denk. Ak. Wien, lxiii, p. 182, pl. i, fig. 1; *B. gananensis*, Vincig. Note by VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 362; *B. græcus*, sp. n., STEINDACHNER, Denk. Ak. Wien, lxiii, p. 187, pl. ii, fig. 4, Greece; *B. ruspolii*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 29, Lake Abbaia, Gallaland; *B. anoplus*, p. 151, Cape Colony, *viniparus*, p. 152, Natal, and *breijeri*, p. 154, Transvaal, spp. nn., M. WEBER, Zool. Jahrb. Syst. x.
- Gobio fluviatilis*, Cuv. Note by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, p. 90.
- Leuciscus*, Cuv. On the forms of *Alburnus* occurring in Italy: M. A. GATTI, Boll. Soc. Rom. Zool. vi, p. 161.
- Squalius cephalus*, L., var. *albus*, Bp., described and figured by STEINDACHNER, Denk. Ak. Wien, lxiii, p. 184, pl. i, fig. 2; *S. suworzevi*, Warp., described and figured by WARPACHOWSKI, Annuaire Mus. St. Petersb. 1897, p. 253, pl. xii, fig. 2; *S. mehdem*, sp. n., *id. ibid.* p. 255, pl. xii, fig. 1, Ob River.
- Tiaroga cobitis*, Girard, figured by GILBERT & SCOFIELD, P. U. S. Mus. xx, pl. xxxvii.
- Phoxinus strauschi*, Warp., and *altus*, Warp., described and figured by WARPACHOWSKI, l. c. pp. 259 & 261, pl. xi, figg. 4 & 5.
- Paraphoxinus epiroticus*, Stdr., described and figured by STEINDACHNER, Denk. Ak. Wien, lxiii, p. 185, pl. i, fig. 3.
- Oreoleuciscus potanini*, Kessl., and *humilis*, Warp., described by WARPACHOWSKI, l. c. pp. 265 & 267.
- Acanthorhodeus dicæus*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 58, Swatow, China.
- Barilius guentheri*, sp. n., BOULENGER, P. Z. S. 1896, p. 920, pl. xlvii, Upper Shire R.
- Nemachilus compressirostris*, sp. n., WARPACHOWSKI, Annuaire Mus. St. Petersb. 1897, p. 270, pl. xi, figg. 1-3, Ob River.
- Acanthopsis lachnostoma*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 60, Swatow, China.

## CHARACINIDÆ.

- Citharinus congicus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 424, Upper Congo.
- Alestes affinis*, Gthr. Note by VINCIGUERRA, Ann. Mus. Genova (2) xvii, pp. 28 & 355.
- Chirodon interruptus*, Jen. Note by BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 4.
- Brycon microlepis*, sp. n., PERUGIA, Ann. Mus. Genova (2) xviii, p. 149, Upper Paraguay.

*Distichodus sexfasciatus* and *leptorhynchus*, spp. nn., BOULENGER, l. c. p. 425, Upper Congo.

## CYPRINODONTIDÆ.

*Cynolebias gibberosus* and *holmbergi*, spp. nn., BERG, An. Mus. Buenos Ayres, v, pp. 294 & 296, Buenos Ayres.

*Jenynsia lineata*, Jen. Note by BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 4.

*Fundulus microlepis*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 356, Somaliland.

## UMBRIDÆ.

*Umbra canina*, Mars. Notes by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, p. 92, fig.

## SCOMBRESOCIDÆ.

*Hemirhamphus weberi*, sp. n., BOULENGER, P. Z. S. 1897, p. 429, pl. xxviii, fig. 4, Celebes.

## MORMYRIDÆ.

*Mormyrus gliroides*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 353, Somaliland; *M. bentleyi*, p. 426, *stanleyanus*, p. 426, and *psittacus*, p. 427, spp. nn., BOULENGER, Ann. Nat. Hist. (6) xx, Upper Congo.

## SALMONIDÆ.

F. F. KAWRAISKY monographs the Salmonoids of the Caucasus and the adjacent seas. Lachse der Kaukasusländer, &c. (Tiflis: 1896-97, 8vo, 2 Pts.).

*Salmo*, L. On the influence of salt water on the spawn of Salmon and Trout: NORDGAARD, Bergens Mus. Aarbog, 1896, No. iv; *S. ischchan*, Kessl., pls. i-vii, *caspius*, Kessl., pls. x & xi, *lacustris*, L., pls. xii & xiii, and *fario*, L., pl. xiv, figured by KAWRAISKY, l. c.; *S. lacustris*, L., var. n. *romanovi*, id. *ibid.* Pt. I, p. 79, pls. viii & ix, L. Tabiszchuri, Caucasus; *S. irideus*, Gibb. On the feeding of newly-hatched young: H. O. FORBES, Bull. Liverp. Mus. i, p. 24. On hybrids between *S. fario*, L., and *S. fontinalis*, Mitch., BEAN, Bull. Amer. Mus. ix, p. 346; *S. namaycush*, Walb. Notes, id. *ibid.* p. 348.

*Noorhynchus nerka*, Walb. Notes on the habits: EVERMANN & SCOVELL, P. Indiana Ac. 1895, p. 131 [1896].

*Coregonus oxyrhynchus*, L. On its occurrence in the R. Sauer: FERRANT, Fauna, 1896, p. 43, fig.; *C. wartmanni*, Bl. On specimens from Lakes Sarnen and Lungern, Switzerland: FATIO, Arch. Sci. Nat. (4) iv, pp. 84 & 496; *C. quadrilateralis*, Rich., and *labradoricus*, Rich. Notes by BEAN, Bull. Amer. Mus. ix, pp. 337 & 339.

*Argyrosomus artedii*, Lesueur, *koyi*, Gill, and *tullibee*, Rich. Notes by BEAN, l. c. pp. 341-343.

## CLUPEIDÆ.

- Trichosoma*, Swains. (= *Thrissa*, Gray, *nec* Raf.). Genus defined by RUTTER, P. Ac. Philad. 1897, p. 64; *T. adelæ*, sp. n., *id. ibid.* p. 65, Swatow, China.
- Spratelloides robustus*, sp. n., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 64, Coast of New South Wales.
- Kowala castelnau*, sp. n., DOUGLAS-OGILBY, *t. c.*, p. 66, Coast of New South Wales.
- Hyperlophina*, n. subfam., for Clupeids with dorsal and abdominal serrature, viz. *Potamalosa*, D. Ogilby, and *Hyperlophus*, D. Ogilby, which genera are defined. DOUGLAS-OGILBY, *t. c.* p. 69. *Hyperlophus copii*, sp. n., *id. ibid.* p. 72, Coast of New South Wales.
- Stolephorus productus*, Poey, described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 96; *S. robertsi* and *astilbe*, spp. nn., *id. ibid.* p. 95, Jamaica.

## ALEPOCEPHALIDÆ.

- Ericara*, g. n., with small, perfectly smooth scales, wide cranium, projecting snout, deeply cleft mouth, uniserial and acrodont teeth on vomer and anterior portion of palatines, and dorsal and anal of moderate extent and opposite each other; *E. salmonea*, sp. n., GILL & TOWNSEND, P. Soc. Washington, xi, p. 232, Bering Sea, 1771 faths.

## HALOSAURIDÆ.

- Echidnocephalus troschelii*, v. d. Marck (foss.), described and figured by A. S. WOODWARD, P. Z. S. 1897, p. 268, pl. xviii.

## GYMNOTIDÆ.

- Gymnotus electricus*, L. On a very large specimen from British Guiana: QUELCH, *Nature*, lv, p. 508.
- Sternopygus macrops*, sp. n., BOULENGER, *Ann. Nat. Hist.* (6) xx, p. 305, British Guiana.

## MURÆNIDÆ.

- B. GRASSI & S. CALANDRUCCIO, *Rend. Acc. Lincei* (5) vi, p. 43, remark on the larval forms of Mediterranean Murænoids.
- Anguilla vulgaris*, Turt. Further notes on the reproduction: SOUTHWELL, *Tr. Norfolk Soc.* vi, p. 262. GRASSI & CALANDRUCCIO, *Giorn. ital. Pesca e Acquic.* 1897, Nos. 7 & 8, and *Mon. Zool. ital.* viii, pp. 233 & 234, summarise the results of their observations on the reproduction and metamorphosis of the Eel. New observations on the larva: GRASSI & CALANDRUCCIO, *Atti Acc. Lincei* (5) vi, p. 239 and *Nature*, lvi, p. 85, figg. On the larval stages: FACCIOLÀ, *Riv. ital. Sci. Nat.* xvii, p. 116. F. W. SEELIG reviews recent observations on the Eel: *Abh. Ver. Kassel*, lxi, p. 47.
- Conger vulgaris*, Cuv. On the eggs: FACCIOLÀ, *Riv. ital. Sci. Nat.* xvii, p. 92.
- Scolenchelys*, g. n., for *Murænichthys australis*, Macleay. DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 246.

- Myropterura*, g. n., allied to *Myrus*, Kaup, for *M. laticaudata*, sp. n., DOUGLAS-OGILBY, t. c. p. 247, Fiji.
- Bascanichthys hemizona*, sp. n., DOUGLAS-OGILBY, t. c., p. 248, Port Jackson.
- Goodella*, g. n., allied to *Synodus*, DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 249; *G. hypozona*, sp. n., *id. ibid.* p. 250, Coast of New South Wales.
- Ophichthys colubrinus*, Bodd. On a colour-variation: WAITE, Mem. Austral. Mus. iii, p. 195, pl. viii, fig. 3.
- Muræna helena*, L. Note on a British specimen by HOLT, J. Mar. Biol. Ass. (2) v, p. 91.

## LOPHOBRANCHII.

- Siphostoma robertsi*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 97, Jamaica.

## PLECTOGNATHI.

- Alutera punctata*, Ag., described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 127.
- Tetrodon nigropunctatus*, Bl. Note by WAITE, Mem. Austral. Mus. iii, p. 197; *T. gillbanksii*, p. 245, pl. xiv, and *cheesemani*, p. 248, pl. xv, spp. nn., F. E. CLARKE, Tr. N. Zealand Inst. xxix, New Zealand; *T. lawleyi*, sp. n. (foss.), CARRAROLI, Riv. ital. Pal. iii, p. 26, pl. —, figg. 6 & 7, Pliocene, Piacenza, Italy.
- Lagocephalus pachycephalus*, Ranz., described by JORDAN & RUTTER, t. c. p. 128.
- Spheroides marmoratus*, Ranz., described by JORDAN & RUTTER, t. c. p. 129.
- Chilomycterus antillarum*, sp. n., JORDAN & RUTTER, t. c., p. 131, Jamaica.
- Orthogoriscus nasus*, Ranz. On a specimen from the Dutch Coast: REUVENS, Notes Leyden Mus. xviii, p. 209, pl. iii.
- Ranzania truncata*, Nardo. Note by PERUGIA, Ann. Mus. Genova (2) xviii, p. 140.

## GANOIDEI.

- E. P. ALLIS, Zool. Bull. i, pp. 1-26, writes on the morphology of the petrosal bone and of the sphenoidal region of the skull of *Amia calva*.
- The same author, J. Morphol. xii, pp. 487-808, pls. xx-xxxviii, describes the cranial muscles and cranial and first spinal nerves in *Amia calva*.
- B. M. DAVIS, P. Indiana Ac. 1896, p. 259, gives an abstract of his investigations on the origin of the Epiphysis cerebri in *Amia calva*.
- C. O. WHITMAN & A. C. EYCLESHYMER, J. Morphol. xii, pp. 309-354, figg., pls. xviii-xix, describe the cleavage of the egg in *Amia*.
- T. W. BRIDGE, P. Z. S. 1897, pp. 722-724, fig., writes on the presence of ribs in *Polyodon folium*.
- H. GARMAN, Bull. Illinois Lab. iv, 1896, pp. 299-310, pls. i-vi, writes on the brain and pineal structures of *Polyodon folium*.
- N. BORODINE contributes materials for the Biology of Russian Sturgeons. Moscow: 1897, folio.
- Amia calva*, L. Notes on the breeding habits: WHITMAN & EYCLESHYMER, J. Morphol. xii, p. 309.
- Caturus*, Ag. (foss.). Description of parts of the skeleton: A. S. WOODWARD, Ann. Nat. Hist. (6) xix, p. 292, pls. viii & ix.
- Osteorhachis leedsi*, sp. n. (foss.): A. S. WOODWARD, t. c. p. 379, pls. x & xi, Oxford Clay, Peterborough.



- Clastes lusitanicus* and *pustulosus*, spp. nn. (foss.): SAUVAGE, Bull. Soc. geol. France (3) xxv, pp. 93 & 94, pl. ii, Garumnian of Vizo, Portugal.  
*Acipenser ruthenus*, L., and *stellatus*, Pall. Notes by MOJO, Rad Jugoslav. Ak. cxuvi, 1896, pp. 94 & 95.

## CROSSOPTERYGII.

- Holoptychius*, Ag. (foss.). Synopsis of the spines: COPE, P. Amer. Phil. Soc. xxxvi, p. 72; *H. serrulatus*, p. 71, pl. ii, fig. 1, Carboniferous, Mansfield, Pennsylvania, *latus*, p. 74, pl. ii, fig. 2, Carboniferous, Factoryville, Pennsylvania, and *flabellatus*, p. 75, pl. ii, fig. 3, Carboniferous, Coxton, Pennsylvania, spp. nn., *id. ibid.*

## DIPNOI.

- T. W. BRIDGE, P. Z. S. 1897, pp. 602 & 603, gives an abstract of a memoir of the morphology of the skull in *Lepidosiren* and other Dipnoi.  
*Ceratodus forsteri*, Krefft. On its introduction in various Australian rivers: D. O'CONNOR, P. Soc. Queensl. xii, p. 101.  
*Ceratodus kannemeyeri*, sp. n. (foss.), SEELEY, Geol. Mag. (2) Dec. iv, iv, p. 543, fig., Trias, Kraai Fontein, Cape Colony.  
 L. LÉGER, C.R. Soc. Biol. (10) iv, p. 543, remarks on some living specimens of *Protopterus annectens*.  
*Lepidosiren paradoxa*, Fitz. General remarks by GOELDI, Bol. Mus. Para. ii, p. 247.  
*Sagenodus foliatus*, p. 77, fig. 1, *conchiolepis*, p. 79, fig. 4, *lacovianus*, p. 79, fig. 5, *quincunciatus*, p. 80, fig. 6, *browniæ*, p. 81, fig. 7, *magister*, p. 81, fig. 8, and *gurleianus*, p. 82, fig. 9, spp. nn. (foss.), COPE, P. Amer. Phil. Soc. xxxvi, pl. i, Carboniferous, Mazon Creek, Illinois.

## ARTHRODIRA.

- B. DEAN, Tr. N. York Ac. xvi, p. 57, pls. i-iii, has a note on the ventral armour of *Dinichthys*.  
*Dinichthys kepleri*, sp. n., CLAYPOLE, Amer. Geol. xix, p. 322, pl. xx, Cleveland Shale, Rocky River Valley, Ohio.  
*Macropetalichthys sullivanii*, Newberry (foss.). Notes by EASTMAN, Amer. Natural. xxxi, p. 493, figg., pl. xii.

## OSTRACODERMI.

- J. V. ROHON, SB. Bohmisch. Ges. 1896, No. xxxvii, discusses the morphology and classification of the Ostracoderms, and proposes a new Sub-class *Protocephali* to embrace the Orders *Aspidorhini*, Rohon (*Pteraspidae*) and *Aspidocephali*, Brandt (*Thyestidae*, *Cephalaspidae*, *Tremataspidae*).

## HOLOCEPHALA.

- Ischyodus suevicus*, sp. n. (foss.), E. PHILIPPI, Palæontogr. xlv, p. 1, pls. i & ii, Chalk, Nusplingen, Württemberg.  
*Edaphodon pliocenicus*, sp. n. (foss.), CARRAROLI, Riv. ital. Pal. iii, p. 26, pl., figg. 3-5, Pliocene, Piacenza, Italy.

## ELASMOBRANCHII.

- C. EMERY, Riv. ital. Pal. iii, pp. 30-33, figg., remarks on the morphology of the *Acanthodida*.
- O. M. REIS, Abh. Senckenb. Ges. xx, pp. 57-156, 1 pl., deals with the structure and systematic position of the *Pleuracanthida*.
- E. FOOTE, Anat. Anz. xiii, pp. 305-308, figg., writes on the extrabranchial cartilages of Elasmobranchs. Remarks by RIDGEWOOD, *t. c.* pp. 499-501.
- E. W. CLAYPOLE, Tr. Amer. Micr. Soc. xviii, pp. 146-150, 1 pl., writes on the structure of the fossil Selachian teeth known as *Mazodus*.
- J. E. PEABODY, Zool. Bull. i, pp. 163-178, figg., writes on the ampullæ of Lorenzini of the Selachians.
- G. SCHNEIDER, Anat. Anz. xiii, pp. 393-401, figg., writes on the kidney and the abdominal pores of *Squatina angelus*.
- L. NEUMAYER, Arch. mikr. Anat. xlviii, pp. 83-111, figg., investigates the histology of the Selachian retina.
- R. BURCKHARDT, Arch. Sci. Nat. (4) iv, pp. 480-483, remarks on the brain of Selachians.
- A. ROMANO, Monit. Zool. ital. viii, pp. 206-212, fig., writes on the fibres in the proencephalon of Selachians.
- A. D. MORRILL, J. Morphol. xiv, pp. 61-82, pls. vii & viii, has a paper on the innervation of the auditory epithelium of *Mustelus canis*.
- H. NEUVILLE, Bull. Mus. Paris, 1897, pp. 55 & 56, remarks on a few points in the visceral anatomy of *Centrophorus*.
- W. A. HASWELL, P. Linn. Soc. N. S. Wales, xxii, pp. 96-103, pls. iv & v, writes on the development of *Cestracion philippi*.
- A. SEWERZOFF, Anat. Anz. xiii, pp. 409-425, figg., has a preliminary communication on the development of the skull in *Acanthias*.
- C. K. HOFFMANN, Morphol. Jahrb. xxv, pp. 250-304, figg., pls. xiii & xiv, continues his embryological investigations on Selachians.
- W. HIS, Arch. Anat. 1897, pp. 1-64, writes on the development of the periblast in Selachians.
- EMILY R. GREGORY, Zool. Bull. i, pp. 123-129, writes on the origin of the Pronephric duct in Selachians.
- H. VIRCHOW, SB. Ges. naturf. Berlin, 1897, pp. 49-59, 91-110, deals with various points in the gastrulation of Selachians.
- J. OGNEFF, Arch. Physiol. 1897, pp. 270-306, pls. iv & v, writes on the development of the electric organ in *Torpedo*.
- H. NEUVILLE, Bull. Mus. Paris, 1897, p. 87, remarks on the habits and bathymetrical distribution of the deep-sea Selachians at Setubal, Portugal.
- Isurus oxyrhynchus*, Raf. (*Lamna spallanzanii*, Bp.): on a specimen from Bergensfjord, Norway; COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 6.
- Lamna cornubica*, L.: recorded from the Isle of Man by KERMODE, Zoologist (4) i, p. 579; *L. borealis*, sp. n. (foss.), PRIEM, Bull. Soc. geol. France (3) xxv, p. 41, pl. i, fig. 9, Chalk of S. Sweden; *L. bassanii*, sp. n. (foss.), DE ALESSANDRI, Mem. Mus. Milano, vi, No. 1, p. 38, pl. i, fig. 16, Miocene, Pietra da Cantoni, Italy.
- Oxyrhina hastalis*, Ag. (foss.): on remains from the Miocene of Alba, Italy; DE ALESSANDRI, Atti Soc. Ital. xxxvi, p. 263, pl. —.
- Scyllium canicula*, L.: on oviposition and development; KOPSCH, Biol. Centralbl. xvii, p. 885, figg.
- Gyropleurodus*? On jaws from New South Wales indicating a new species; DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 245.
- Heptanchias haswelli*, sp. n., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 62, Loc. — ?

- Chlamydoselachus anguineus*, Garm.: on a specimen from the Varanger Fjord, Norway: COLLETT, Univ. Festschr. Kong Oscar II Jubil. 1897, 17 pp., 2 pls.
- Rhinobatus stellio*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 91, Jamaica.
- Raia rospinis*, p. 231, *obtusa*, p. 231, and *interrupta*, p. 232, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, Bering Sea.
- Myliobates placentinus*, sp. n. (foss.), CARRAROLI, Riv. ital. Pal. iii, p. 25, pl. —, figg. 1 & 2, Pliocene, Piacenza, Italy.
- Ceratobatis*, g. n., like *Dicerobatis*, Blainv., but teeth restricted to the upper jaw; *C. robertsii*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 227, Jamaica.
- Tamiodontis vetustus*, g. & sp. nn., for the cranium of a fossil Skate from the Middle or Upper Devonian (?) of Kentucky: EASTMAN, Amer. J. Sci. (4) iv, p. 85, pl. 1.
- Edestus lecontei*, sp. n., B. DEAN, Tr. N. York Ac. xvi, p. 62, pls. iv & v, Carboniferous (?), Nevada.
- E. W. CLAYPOLE, Tr. Amer. Micr. Soc. xviii, pp. 151–154, 1 pl., investigates the structure of the fossil spine *Ctenacanthus angustus*, Newberry.

## CYCLOSTOMI.

- F. K. STUDNÍČKA, Arch. mikr. Anat. xlviii, pp. 606–643, pls. xxx–xxxi, writes on the histology and histogeny of the cartilages of Cyclostomes.
- W. KAPEL'KIN, Bull. Soc. Moscou, 1896 (1897), pp. 481–514, 2 pls., investigates the histological structure of the skin of *Petromyzon*.
- F. MAYER, Anat. Anz. xiii, pp. 649–657, pl. i, has a paper on the central nervous system of *Ammocetes*.
- E. GIGLIO-TOS, Atti Acc. Torino, xxxii, pp. 362–376, pl. —, writes on the hematopoietic organ and the cellular elements of the blood in the larval Lamprey (*Ammocetes branchialis*).
- BASHFORD DEAN, Quart. J. Micr. Sci. xl, pp. 269–279, pl. xvii, writes on the development of *Bdellostoma stouti*, Lock.
- O. MAAS, SB. Ges. Munchen, xii, pp. 46–58, figg., writes on a pancreas-like organ in *Myxine*.
- A. BRACHET, Anat. Anz. xiii, pp. 621–636, figg., writes on the development of the liver and pancreas in *Ammocetes*.
- G. C. PRICE, Zool. Jahrb. Anat. x, pp. 205–226, pls. xvi & xvii, has a paper on the excretory organs of *Bdellostoma stouti*, Lock.
- J. W. SPENGEL, Anat. Anz. xiii, pp. 49–60, figg. & 211–216, writes on the excretory organs of *Myxine*. R. SEMON, *i. c.* pp. 127–137, 260–264, deals with the same subject.
- O. MAAS, Zool. Jahrb. Anat. x, pp. 473–510, pls. xxxviii–xli, writes on the development of the excretory organs in *Myxine*.
- R. SEMON, Gegenbaur Festschrift, iii, pp. 167–192, 2 pls., contributes a paper on the excretory system of the Myxinoids, and discusses its bearing on the morphological conception of the urogenital system in Vertebrates.
- W. FELIX, Anat. Anz. xiii, pp. 570–599, remarks on Price's paper on the development of the excretory organs of *Bdellostoma stouti* and discusses its bearing on embryology.
- S. HATTA, Annot. Zool. Japon. i, pp. 137–140, has a preliminary note on the development of the pronephros in *Petromyzon*.
- Petromyzon wilderi*, Gage. Note on the spawning habits: B. DEAN & F. B. SUMNER, Tr. N. York Ac. xvi, p. 321, pl. xxvii.
- Macrophthalmia*, g. n., distinguished from all other *Petromyzontidae* by large, well-developed eyes; *M. chilensis*, sp. n., PLATE, SB. Ges. naturf. Berlin, 1897, p. 137, Mouth of Maullin R., S. Chili.

- R. H. TRAQUAIR, P. Z. S. 1897, pp. 314-317, refutes B. Dean's interpretation of the remains of *Palæospondylus gunni*, Traq.

## LEPTOCARDII.

- E. W. MACBRIDE, P. Cambridge Soc. ix, pp. 309-313, discusses the relationship of Leptocardians and *Balanoglossus*.  
C. S. MINOT, Amer. Natural. xxxi, pp. 928-943, discusses the affinities of *Amphioxus* and the ancestry of Vertebrates.  
F. KOPSCH, SB. Ges. naturf. Berlin, 1897, pp. 5-13, figg., writes on the formation and signification of the canalis neurentericus in *Amphioxus* and Tunicates.  
J. SOBOTTA, Verh. Ges. Wurzburg (2) xxxi, pp. 101-121, fig., pl. —, writes on Gastrulation in *Amphioxus*.  
H. KLAATSCH, Morphol. Jahrb. xxv, pp. 224-243, figg., pl. xii, remarks on the Gastrula of *Amphioxus*.  
W. KRAUSE, Zool. Anz. xx, p. 513, writes on the sensitiveness of *Branchiostoma lanceolatum* to differently coloured lights.  
H. NAKAGAWA, Annot. Zool. Japon. i, p. 125, describes a *Branchiostoma* (spec. ?) from Nyushya, Japan.



# VI. TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.R.S.

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## INTRODUCTION.

AMONGST the more important publications of the year we must reckon SEELIGER's numbers 6 to 10 of *Tunicata* in Bronn's "Thier-Reich." They contain the conclusion of the account of the *Appendiculariida*, and the commencement of the detailed account of the structure of the *Ascidacea*. We may also specially note RITTER's preliminary account of a remarkable new type of Compound Ascidian from California which unites the structure of a Polyclinid with the general appearance of a Clavelinid. It will require the formation of a new family. The other papers of this year seem of minor importance, and there is a curious absence of any dealing with systematics.

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## I. TITLES.

BANCROFT, F. W. Notes on *Chelyosoma productum*, Stimp. Science, new series, v, No. 116, p. 436.

- CAULLERY, M. Sur la morphologie de la larve composée d'une Synascidie (*Diplosomoides Lacazei*, Giard). C.R. Ac. Sci. cxxv, 5 Juillet 1897, pp. 54-57.
- HERDMAN, W. A. Plankton collected...North Atlantic...&c. Tr. Liverp. Biol. Soc. xii, p. 33.
- , in 10th Ann. Rep. Liverpool Marine Biology Committee. Tr. Liverp. Biol. Soc. vol. xi.
- LEFEVRE, G. Budding in Ecteinascidia. Anat. Anz. xiii, No. 18, pp. 473-483; also Johns Hopkins Univ. Circ., Nov. 1897, p. 5.
- , Budding in Clavelinidæ. Science, new series, v, No. 115, pp. 433-4.
- METCALF, M. M. The follicle cells of Salpa. Zool. Anz. No. 534, pp. 210-217.  
(Also Johns Hopkins Univ. Circ., Nov. 1897, p. 3.)
- , The neural gland in *Ascidia atra*. Zoological Bulletin, i, 3, pp. 143-146.
- MATZDORFF, C. Jahresber. u. d. Tunicaten, f. 1892-1893, Arch. Naturges., lix, 2 Bd. 2 Hft., pp. 1-40.
- RITTER, W. E. Notes on the structure and development of the type of a new family of so-called Social Ascidiæ from the coast of California. Science, new series, v, No. 115, p. 434.
- SEELIGER, OSW. Tunicata (Mantelthiere) in Bronn's Klassen und Ordnungen des Thier-Reichs Bd. III. Supp., Lief. 6-10, pp. 145-208.
- , Reviews of Tunicata papers in Zool. Centralbl. v.
- TODARO, F. Sopra lo sviluppo della parte anteriore del corpo delle Salpe. Rend. Acc. Lincei, vi, pp. 54-61, 1 fig.
- VALLE, A. DELLA. Tunicata, Zool. Jahresber. 1896, 12 pp.

## II. BIOLOGY.

### A. ANATOMY.

METCALF describes an *Ascidia* (*A. atra*) from the West Indies having numerous lateral branches of the hypophysial (neural) duct each opening by one or more ciliated funnels into the peribranchial chamber. He compares this with the condition described by Julin and Herdman for *Phallusia mammillata* and by Roule for *Ascidia Marioni* and suggests that *A. atra* and the two last named species should all be placed together in the same genus.

RITTER has found on the Californian coast a new compound Ascidian which with the essential structure of a Polyclinid such as *Amaroucium* has the external appearance, habit and separation of the ascidiozooids seen in *Clavelina*. The structure of the gonads and oviducts, the relations of the epicardiac tubes and the arrangement of the branchial tentacles however make it impossible to place this form in the Polyclinidæ or any existing family. Part of the oviduct is expanded to form a uterus. The development is abbreviated, and it is doubtful if there is any free-swimming larval stage. The embryos are nourished by amoeboid cells in the uterus. The peribranchial sacs arise as two well-defined ectodermal invaginations on the dorsal side of the embryo.

SEELIGER commences in his 6-10 Lieferung a very full and detailed account of the anatomy and histology of the simple and compound

Ascidians. After discussing the general structure, the orientation, the body-form, formation of colonies, size and colour, he passes to the composition and chemistry of the test. All important points are, as in the preceding parts of this work, very fully and satisfactorily illustrated.

BANCROFT shows that the Pacific species *Chelyosoma productum* is quite distinct from its Atlantic representative *C. macleayanum*. He describes the arrangement of the muscles and the structure of the test, and considers the genus closely related to *Corella*.

## B. EMBRYOLOGY.

METCALF supports Brooks' statement that the blastomeres really build up the body eventually, and that the kalymmocytes are merely temporary, pass into the bodies of the blastomeres and there undergo degeneration.

LEFEVRE points out the conflicting statements as to the origins of organs in the buds of compound Ascidians and rightly observes that it is desirable that the process should be studied in many other species where the bud development has not yet been traced. He has studied the process in *Ecteinascidia turbinata*, Herdman, and finds that bud development cannot be harmonised with the germ layer theory. He considers that *Ecteinascidia* differs from *Clavelina* and agrees with *Perophora* in the total absence of the epicardium; but does not show the rotation of the inner vesicle seen in *Perophora*. The bud begins as two concentric vesicles, derived from the stolon, and the development as a whole is very like that of *Perophora*. The inner vesicle is derived directly from the stolonian septum which is not flattened. The pericardium and heart and the dorsal tube or hypophysis arise from the wall of the inner vesicle and possibly to some extent from free blood cells which have wandered out from the wall of the inner vesicle. The primitive inner vesicle is therefore the most important part of the bud, and the ectodermic vesicle plays no part in the development except the production of the future ectoderm and of the test. Even the gonads are derived from the wall of the inner vesicle. He finds that free amœboid blood cells derived from the wall of the inner vesicle play a considerable part in forming some organs, such as the commencement of the pericardium, and of the dorsal (neural) tube. The ganglion is differentiated from the dorsal wall of the neural tube. He does not consider the bud development to be at all comparable with the embryonic processes.

CAULLERY describes the details of the precocious budding of *Diplosomoides*. He shows that after hatching the larva is composed of (1) a typical oozoid except that the rectum is atrophied, (2) a typical abdominal bud, and (3) two complementary thoracic half buds. This larva is really two individuals, the oozoid and the different parts of a blastozoid. He explains the separation of the two halves of the thoracic bud by the mechanical influence of the abundant yolk. He is unable to confirm Lahille's account of dimorphism in the larva.

TONARO has worked at the development of *Salpa africana-maxima*, and he now gives an account of the formation of the various organs in the anterior part of the body. In the mesenchyme between the endodermal and ectodermal vesicles are formed the peribranchial sac, the cerebral vesicle, the pericardium, and it may be reproductive organs. A primitive mouth or palæostome forms which becomes a closed sac. This then opens into the anterior brain vesicle (palæoneural canal) for a time. The subneural gland is paired and is derived partly from the cerebral infundibulum and partly from the ectodermal palæostome. The "neostome" forms later as a stomodæum. The development and differentiation of the ganglia and of the eyes are traced in both the solitary and aggregated forms.



## C. GEOGRAPHICAL DISTRIBUTION.

SEELIGER commences his "Lieferung" 6 with an account of the distribution of the Appendiculariidae (Larvacea) both vertically and horizontally in the Ocean.

HERDMAN gives a preliminary list of Tunicata (and other animals) dredged in Puget Sound—including some new species—which will be more fully reported upon in next year's record. He draws attention to the similarity between the Puget Sound fauna and that of North Europe.

BANCROFT discusses the Pacific species of *Chelyosoma*.

HERDMAN notes some of the species of Ascidians found at Port Erin in the Isle of Man.

## III. SYSTEMATIC.

No new species have been described in 1897; and there have been no papers dealing with classification, or establishing larger groups—with the exception of the preliminary notice of Ritter's new family of "Social" Ascidians in "Science" for March 12th. As however no generic, specific, or family names have yet been given to this new form, it cannot be formally recorded, and will no doubt figure in next year's record.

## VII. MOLLUSCA.

BY

E. R. SYKES, B.A., F.Z.S.

Assisted by E. A. SMITH, F.Z.S., and G. C. CRICK, F.G.S.

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### INTRODUCTION.

THE RECORDERS deem it advisable to remark that they have followed, almost in its entirety, the classification previously so successfully utilized by Mr B. B. Woodward. Their only deviation has been that in the *Helicida*, the groups have been suppressed, as they are of opinion that by the adoption of this course, simplification of, and easier reference to, the Record will result. Further they have felt that a more liberal course in giving the full titles of Palaeontological papers would be of much assistance to students, who frequently desire to ascertain what work has been done by a particular author; this mainly accounts for the apparent increase in the number of papers written during the past year. New Fossil genera

and subgenera have been invariably noticed in their place in the systematic portion, but not new species, as this course would involve an enormous increase in the size of the Record; the fact of new species having been described is, however, stated in the portion relating to Palæontology.

The main portion of the work of the past year has been of a systematic nature. TRYON's Manual (475) has dealt with the *Bulimuli* on the one hand and the *Scaphopoda* on the other; PILSBRY, in the terrestrial series having given special attention to the sculpture of the protoconch. SIMROTH (61) has in Bronn's Klassen und Ordnungen des Thier-Reichs made better progress than in the previous year and dealt in part with the *Gastropoda*. The 'Conchylien-Cabinet' of MARTINI and CHEMNITZ (288) has steadily appeared, the published parts relating to *Auriculacea*, *Scalariidae*, *Turritella*, *Helix*, and *Columbella*. GODWIN-AUSTEN (167) has, after some years' interval, recommenced his study of the Indian land and freshwater Mollusca. HOYLE (212) has published a supplement to his Catalogue of recent *Cephalopoda*, in which he has carried his list to the year 1896. To DAUTZENBERG (112) we owe a well-illustrated work of a popular nature on the marine shells of France, while ADAMS (3) has issued a second edition of his work on the land and freshwater molluscs of Great Britain. The former author has also in conjunction with DE BOURY (114, 115) and FISCHER (116-8) described many new forms from the careful dredgings carried out under the auspices of Prince Albert of Monaco. LOCARD (259) has issued the first volume of the Mollusca from the 'Travailleur' and 'Talisman' expeditions, relating to the *Gastropoda*; his new species are dated, in general, 1896—incorrectly; some being even referred to earlier years. To the pen of KOBELT (245) is due an interesting work on the Zoo-geography of the Palæarctic Region, based on the land and freshwater shells; with MOELLENDORFF (248) he has also commenced a list of the non-marine operculata. We may also call attention to the paper on the principles of nomenclature by MELVILL (296), who has, further, with STANDEN (301), continued his studies on the marine Mollusca of the Loyalty Islands. MARTENS (281, 282) has written valuable works on the freshwater and brackish water fauna of the East Indies and the land and freshwater shells of German East Africa, this latter term being used by him in a wide sense; also, after an interval, a continuation of the molluscan portion of the 'Biologia Centrali-Americana' has appeared. SOWERBY (433) has issued a supplement to his work on the 'Marine Mollusca of South Africa,' and WATSON (503) has written a valuable account of the marine fauna of Madeira. A new synopsis of the non-marine Mollusca of the Palæarctic Region has been commenced by WESTERLUND (510), of which only one part—relating to the *Bulimi* and *Pupæ*—has as yet been issued. Among faunal works relating to land and freshwater shells we may note BILLEY's (40) catalogue of Costa Rica, the very valuable work of AILLY (4) on the Cameroons, and SMITH's (431) paper on Rotuma Island; whilst PILSBRY (366) has issued a catalogue of the land shells of North America. Several papers by SUTER (450-5) on the fauna of New Zealand will also repay attention. MOORE (317, 318) has written a note or two on the fauna of Lake Tanganyika, of which subject more will be heard in future years.

BERNARD (33-8) has continued his valuable studies on the development and morphology of the hinge in the *Pelecypoda*. Several critical remarks will be found in the list of *Cochlostyla* given by HIDALGO (200); though his references to plates as yet unpublished in his 'Obras' will probably cause inconvenience. *Nautilus* has received further attention from WILLEY (517, 518) and also from GRIFFIN (173); the *Muricidae* have been studied by BAKER (23), *Cyclostrema* and its allies by BUSH (66), and the *Pleurobranchidae* by BERGH (31); while the *Ledidae* and *Nuculidae* have formed

the subject of a paper by VERRILL and BUSH (486), the former author having also written a study of the *Pectinidæ*, a subject which has attracted DOUVILLÉ (126).

A living *Pleurotomaria beyrichii* has been observed by MITSUKURI (306); we hope to hear further on its anatomy. PLATE (373) has issued a memoir on the anatomy and phylogeny of the *Chitonidæ*; and RICE (390) has studied the gills in the *Pelecypoda* with a view to arriving at their phylogeny and relations; we give his results on p. 31.

Amongst palæontological papers of special interest to students of the recent Mollusca we may name those of KENNARD and WOODWARD (236) on the English cave-deposits; of BLANCKENHORN (44) on the quaternary of Syria; of COSSMANN (94, 95) on the tertiary of France and Belgium; the catalogue of the Australasian tertiary molluscs by HARRIS (184); and also the papers by SACCO (403), though these last are somewhat overburdened by his system of nomenclature.

Amongst the more remarkable efforts in nomenclature during the past year we may recall the fact that the author who recently named a shell *Extra extra*, has now perpetrated *Diabolica diabolica* for a recent species of unknown habitat!

The Recorders desire to call attention to the serious inconvenience occasioned by the neglect of authors, especially on the Continent, to affix any distinguishing mark to genera and species, whereby it may be ascertained whether they are proposed as new or not; several such cases have occurred in the preparation of the present Record.

In conclusion the Recorders have to express their special thanks to Mr B. B. Woodward, as also to those authors who have favoured them with reprints of their papers; further, they have to apologise for any errors and omissions that may result from their inexperience. For any notes of such errors they will feel obliged, as also for criticisms that may occur to students.

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## II. BIOLOGY.

## A.—ANATOMY, PHYSIOLOGY.

## 1. GENERAL.

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## 2. SHELL AND INTEGUMENT.

*Cypræa lynx* deformed by disease; FORD (144).—Variation of the shell in land and freshwater mollusca; CLESSIN (81).—Note on prodissoconch of lamellibranchs; BERNARD (35).—Banding of shell in *Tachea*; BOYCOTT (56).—Armature of Helicoid land shells; GUDE (177).—Sinistral *Helix ericetorum* from Bundoran; TOMLIN, Irish Natural. vi, p. 324.—Sinistral monstrosities of several land shells; ANCEY (13).—Note on shell-colour-

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### 3. MUSCULAR SYSTEM.

[None.]

### 4. DIGESTIVE SYSTEM.

Radula of *Endodonta waterhousiae*; HEDLEY (190).—Radula of *Trochonanina similans*, p. 53, *Pseudoglossula leroyi*, p. 115, *Isidora trigona*, p. 138, *Physopsis ovoidea*, p. 141, *Lanistes stuhlmanni*, *farleri*, p. 171, *Bythinia neumanni*, p. 191; MARTENS (282).—Radula of *Limnæa brevispira*, p. 2, *javanica*, p. 5, *Ancylus javanus*, p. 16, *Vivipara javanica*, p. 24; MARTENS (281).—Radula of *Tatea huonensis*; PILSBRY (359).—Variation of radula in *Helix pomatia*; SIMROTH (419).—Buccal mass; AMAUDRUT (9).—Notes on the odontophore, with figures of those in several British land shells; BOWELL (54).—Radula of *Otopoma* and *Tropidophora*; GODWIN-AUSTEN (167).—Radula of *Monodonta porcifera*, *M. coracina*, and *Gibbula suteri*; SUTER (454).—Radula of the *Pupidae*; GWATKIN (179).—Movements of œsophagus in *Aplysia depilans*; BOTTAZZI (51).

### 5. CIRCULATORY SYSTEM.

On the Vascular Walls in Mollusca; BERGH (32).—The multiplicity of the reno-pericardiac canals in *Elysia viridis* confirmed; HECHT (189).—On the primitive kidney in *Cyclas cornea*; STAUFFACHER (439).—Blood and lymphoid organs in Invertebrata; CUENOT (101).

### 6. RESPIRATORY SYSTEM.

Gills in *Lamellibranchiata* used for classification; RICE (390).

### 7. EXCRETORY AND SECRETORY SYSTEMS.

On the dermal glands in Mollusca; THIELE (466).—Glandular secretions in invertebrata; BOTTAZZI (50).

### 8. NERVOUS SYSTEM.

Minute structure of nervous system of Mollusca; GILCHRIST (163).—Nerve Cells of *Gastropoda*; McCURE (294).—Nervous system of *Anodonta*; FREIDENFELT (147).

### 9. SENSORY SYSTEM.

The peripheral glandular organ in *Helcion pellucidum*; BOUTAN (52).—Eyes of *Limax maximus*; HENCHMAN, Science, v, pp. 428–9.

### 10. GENERATIVE ORGANS.

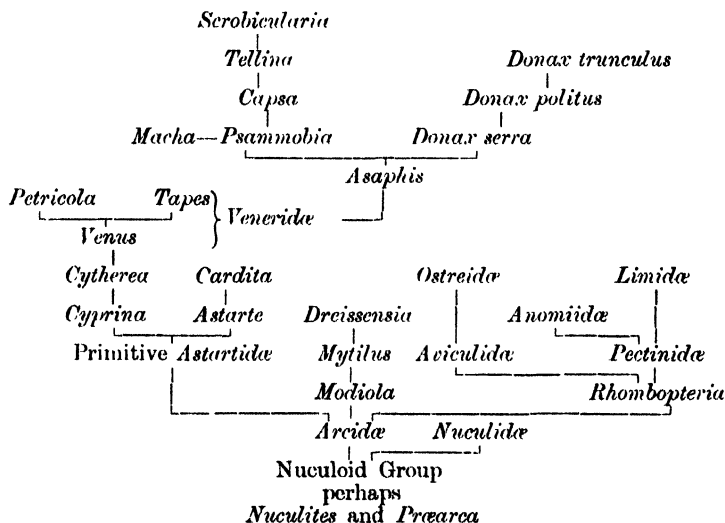
Genital organs of *Endodonta waterhousiae*; HEDLEY (190).—Spermatogenesis in *Helix pomatia*; GODLEWSKI (165, 166).—Genitalia of *Hyalinia nitida* and *H. excavata*; MOSS (320).—Genitalia of some Bohemian *Arionidae*; BABOR (21).—Genitalia of *Hapalus disparilis*, p. 128; MARTENS (282).—Generative organs in some species of *Arion*; COLLINGE (88).

## 11. EMBRYOLOGY.

On the motions of the spermatogones and on spermatogenesis in *Helix pomatia*; LEE (257).—Embryology of *Crepidula*; CONKLIN (91).—The cell lineage of *Planorbis*; HOLMES (209).—On the structure and development of Molluscan ova, especially of *Pleurophyllidia californica* and *Diarulula sandiegensis*; MACFARLAND (274).—Embryology of *Yoldia limatula*; DREW (128).—Oviposition of *Nautilus macromphalus*; WILLEY (517).—Embryology and sexes of *Unionidae*; SIMPSON (418).—Fertilization in gastropods; CRAMPTON, Science, v, pp. 320, 391.—Fertilization and maturation of eggs in *Limax*; BYRNES, Science, v, p. 391.—Segmentation of egg in *Tethys fimbriata*; VIGUIER (489).—Spermatozoa in *Paludina vivipara*; AUERBACH (20).

## 12. PHYLOGENY AND CLASSIFICATION.

The Mollusca of Tanganyika represent a contamination of the Lake by the sea; MOORE (318).—Phylogeny of Chitons; PLATE (373).—Classification and Phylogeny of the *Pleurotomariidae*; BURCKHARDT (65).



Above classification formed on gills by RICE (390).

## 13. STRAY NOTES.

On the absorption of iron in *Ostrea edulis*; CARAZZI (70).—A new species of parasitic Gastropod within the body-cavity of an Echinoderm (*Chirodota*); LUDWIG (272).—Physiological experiments upon Bivalves in various solutions; PIERI (353).—On the etymology of the word Purple; DEDEKIND (119).—*Achatina crawfordi* appears to be viviparous; CLAPP, Nautilus, xi, p. 69.—A reversion of a colour variation in *Arion empiricorum*; COLLINGE (86).—Parasitic mollusca; KÜKENTHAL (256).—Biological notes on *Dreissensia polymorpha*; FRENZEL (149, 150).—*Loligo* changes colour when resting; VERRILL (482).—Note on parasite of *Lamellibranchiata*; GIARD, C.R. Soc. Biol. iv, p. 956; also LEGER, t. c. pp. 957, 987.—



Connection between mollusca and plants, and notes on habits; BRANDICOURT (58).—Augury from combat of shell-fish; MINAKATA, *Nature*, lvi, p. 30; SILBERRAD, *t. c.* p. 494.—Oysters and disease; HERDMAN (194).—Copper in oysters; LOWE (271); and see HERDMAN (195).—Atmosphere of sea-coast said to corrode shells; KENYON (241).—Hibernation of slugs and *Helices*; SWANTON (456).—Notes on three species of *Agriolimax*; COCKERELL (83).—Habits of snails in confinement; SOPER, *Nautilus*, x, p. 113.—Nest-building of *Lima hians*; ROBERTSON (392).—Habits of *Cæcilioides acicula*; WRIGHT (525).—*Tachea nemoralis* active in winter; ROPE (397).—Gulls eating *Tellina balthica*; STUBBS, *J. Conch.* viii, p. 430.

#### 14. ECONOMICS.

Oysters transplanted; with notes on American oyster industry; TOWNSEND (472).—Development and culture of *Ostreidae* in West Australia; KENT (238).—On oyster culture in relation to Disease; FITCH (139).—*Crepidula* and *Anomia* used for forming spawning beds for oysters; STEARNS, *Nautilus*, xi, p. 38.—Oyster-culture of the Romans; GUNTHER (178).—Methods of cooking snails; STEPHENSON, *J. Malac.* vi, p. 16.—Visit to a snail farm; DARBISHIRE (111).

#### 15. COLLECTING AND PRESERVATION.

Popular notes on collecting and preserving land and freshwater mollusca; ANON. *Natural. J.* vi, pp. 39-42.

### B.—DISTRIBUTION.

#### GEOGRAPHICAL.

N.B.—The numbers in brackets refer to the "Titles." A reference is thus given to each memoir containing any notice affecting the Molluscan fauna of the several geographical divisions here adopted. Synonymic notes and changes of systematic position are, however, not included here. References to minor notes, which are not included in the List of Titles, but which contain faunistic facts of any value, are given to the work direct.

#### NON-MARINE MOLLUSCA. [For *Marine* see p. 38.]

##### a. PALÆARCTIC ZONE.

Palæarctic Region:—*Bulimi* and *Pupæ* of, with new species; WESTERLUND (510).—Distribution of palæarctic land and freshwater mollusca; KOBELT (245).—Europe: notes on several slugs; SIMROTH (421).

##### 1. Septentrional Region.

British Islands:—*Arion ceruleus*, n. sp.; COLLINGE (86): Land and freshwater shells; ADAMS (3): Popular notes on some freshwater species; ANON. *Int. J. Micr.* vii, pp. 241-246: Bibliography for 1890 & 1891; ROEBUCK (393): colouration of non-marine; BOYCOTT (55, 57): Foreign varieties of British shells; COCKERELL (85): List of British slugs; ANON. *Natural. J.* vi, pp. 93-95, also land-shells; *t. c.* pp. 124-129: Notes on some land and freshwater shells; EDWARDS (132): Origin of British fauna; SCHARFF, *P. Irish Ac.* iv, p. 427: *Testacellæ* of; WEBB (504).

England:—Northamptonshire: *Cæcilioides acicula*; WRIGHT (525).—Derbyshire: *Limax cinereoniger*; OLDHAM, *J. Conch.* viii, p. 433.—Bromley: Land-shells of district; KENNARD (235).—Essex: Non-marine molluscs of; WEBB (507).—Chelmsford: Land-shells from brick-earth;

WEBB (505).—Sutton Coldfield: Land and fresh-water shells of; WOOD (520).—S. Wales: Land-shells; GAIN (160).—Yorkshire: *Vertigo minutissima* and others; LONG, Natural. J. vi, p. 19.—Essex: Hand-list of non-marine; WEBB (506).—*Testacella scutulum* at Adel, near Leeds; CROWTHER, Naturalist, 1897, p. 80.—*Testacella* found in gardens near the sea at Porchester, Hants; HEADLEY (187).

Scotland:—List of Mollusca from the freshwater lochs of Scotland; SCOTT & DUTHIE (411).—Stirlingshire: Land and freshwater shells of; M'LELLAN (307).—Midlothian: *Vertigo substriata* in; EVANS, Ann. Scott. Nat. Hist. 1897, p. 126.

Ireland: *Paludestrina jenkinsi* first recorded; ADAMS (2).—Westmeath: Land and freshwater shells; FARRAN, Irish Natural. vi, p. 200.—Ballycastle and district: land-shells from, with notes; STANDEN (436): see also ADAMS (1).—Fermanagh: *Hyalina excavata*; SCHARFF, Irish Natural. vi, p. 281.—Killary and Westport: Land and fresh-water; WELCH, Irish Natural. vi, pp. 304 & 305.

France:—Aude: Freshwater and land-shells; FAGOT (136).—*Bulimus [Cecilioides] arcula* extinct in Loire-inférieure; CHAILLOU (72).

West Prussia:—Land and freshwater; PROTZ (382).

Saxony:—Mollusca of; EHSMANN (133).

Denmark:—*Unio*, two n. spp.; DROUET (129).

Sweden:—*Pseudanodonta acutalis*, n. sp.; DROUET (129).

Russia:—New species of *Bythinia*, *Helix* and *Planorbis*; WESTERLUND (511).

Siberia:—New species of *Baicalia*, *Carychium*, *Helix*, *Linnaea*, *Pisidium*, *Planorbis*, *Unio* and *Valvata*; WESTERLUND (511).

## 2. Circum-Mediterranean Region.

France:—*Gastropoda* and *Pelecypoda* of the lakes of the French Alps; BLANCHARD & RICHARD (43).—A list of Mollusca collected at Pratteln, N. Jura; DOLLFUS (123).—Savoie: *Unio valens*, n. sp.; DROUET (129).

Sicily:—Land shells of adjacent islands, with critical remarks; MONTE-ROSATO (316).

Oran:—New species of *Helix*; PALLARY (338).

Italy:—Forty-seven land and freshwater, with *Agriolimax maggii*, n. sp.; PARAVICINI (341).

Bohemia:—A few land and freshwater mentioned; FRIČ & VÁVRA (152).—*Arionidae*; BABOR (21).

Balaton Lake:—Freshwater fauna; DADAY (102).

Croatia:—New *Pomatias*; WAGNER (499).

Bulgaria:—Land-shells, with new species of *Helix* and *Clausilia*; STURANY (449).

Livonia:—*Unio nitidovirens*, n. sp.; DROUET (129).

Asia Minor and Syria:—Land and freshwater Mollusca, with new species of *Pomatia*, *Xerophila*, *Buliminus* and *Isidora*; ROLLE & KOBELT (249).—Syria: New species of *Ancylus* and *Buliminus*; NAEGELE (324).

Persia:—A new species of *Bythinia*; WESTERLUND (511).

Caucasus:—New species of *Clathropodium* (n. gen.), *Clausilia*, *Helix*, *Hyalina*, *Planorbis*, and *Valvata*; WESTERLUND (511).

Transcaucasia:—New species of *Helix* and *Valvata*; WESTERLUND (511).

## 3. Central Asiatic Region.

Turkestan:—*Helix retteri* and *Buliminus retteri*, n. spp.; ROSEN (398).

Lake Baikal:—The fauna is of marine origin; HOERNES (205).

Central Asia:—New species of *Cathaica* and *Pseudiberus*; ANCEY (14).

Buchara:—*Anodonta bactriana*, n. sp.; ROLLE (395).

4. *Chinese Region.*

China:—*Gonostoma omphalospirum*, n. sp.; MOKILLENDORFF (310): *Pterocyclus schmackeri*, *Platyrhaphe schmackeri*, n. spp.; MOELLENDORFF (311).

5. *Japanese Region.*

Japan:—*Melania yokohamensis*, n. sp.; HARTMAN (185): Species of *Vivipara* figured; IWAKAWA (222).

6. *Atlantidean Region.*

Madeira:—*Helix watsoni*, n. sp.; JOHNSON (226).

## b. PALÆOTROPICAL AFRICAN ZONE.

7. *Central African Region.*

Africa:—Species of *Urocyclus*; SIMROTH (420).

British Central Africa:—Land and freshwater shells; SMITH in JOHNSTON (225).

East Africa (including Lake Tanganyika, &c., and Zanzibar):—Land and freshwater with new species of *Ancylus*, *Buliminus*, *Bythinia*, *Cyclophorus*, *Geostilbia*, *Hapalus*, *Isidora*, *Lanistes*, *Limnea*, *Melania*, *Opeas*, *Physopsis*, *Planorbis*, *Spatha*, *Sphaerium*, *Streptaxis*, *Subulina*, *Tayloria*, *Thapsia*, *Unio*, *Vitrina*, and *Vivipara*; MARTENS (282): Land and freshwater; MARTENS (280): A list of the known species of land and freshwater Mollusca; MARTENS (284): New species of slugs; SIMROTH (421).

8. *West African Region.*

W. Africa:—*Perideris kobelti*, n. sp.; PILSBRY (361).

Old Calabar:—*Achatina studleyi*, n. sp.; MELVILL & PONSONBY (299).

Cameroons:—New species of *Achatina*, *Cyrenella*, *Dreissensia*, *Ennea*, *Hapalus* (?), *Helicarion*, *Helix*, *Limicolaria*, *Opeas*, *Pedipes*, *Pseuduchatina*, *Pseudoglossula*, *Streptaxis*, *Streptostele*, *Thapsia*, and *Trochozonites*; AILLY (4): *Moulinsia goldfussi*, n. sp.; MOELLENDORFF (311).

9. *South African Region.*

S. Africa:—New species of *Achatina*, *Assimineia*, *Buliminus*, *Ennea*, *Hapalus*, *Planorbis*, *Pupa*, *Subulina*, and *Trachycystis*; MELVILL & PONSONBY (300): *Cyclophorus wahlbergi* made type of n. subgen. *Natalia* [nom. præocc.]; GODWIN-AUSTEN (167): Land and fresh-water shells of German South Africa; MARTENS (285): List of fresh-water species; WEBER (508).

10. *Malagasy Region.*

Mauritius:—*Omphalotropis albolabris*, n. sp.; MOELLENDORFF (314).

11. *Afro-Arabian Region.*

Somaliland:—New species of *Achatina*, *Helicella*, and *Limicolaria*; PILSBRY (358).

Socotra:—New species of *Auricula*, *Buliminus*, *Ennea*, *Lithidion*, and *Stenogyra*; SMITH (426).

## c. PALÆOTROPIC ORIENTAL ZONE.

## 12. Indian Region.

- Bombay:—Land and fresh-water, with notes; PEILE (347).  
 Travancore:—*Pterocylus pseudocumingi*, n. sp.; MOELLENDORFF (311).  
 Ceylon:—New species of *Euplecta*, *Kaliella*, and *Lamprocystis*; GODWIN-AUSTEN (168): New species of *Corilla*, *Euplecta*, *Polita*, *Macrochlamys* (?), *Cyathopoma*, and *Diplommatina*; SYKES (458).

## 13. Indo-Chinese Region.

- Arakan Hills:—*Pupina tongupensis*, n. sp.; GODWIN-AUSTEN (167).  
 Pegu:—*Plectopylis linteræ*, n. sp.; MOELLENDORFF (310).  
 Burmah:—*Pupina limitaneus*, n. sp.; GODWIN-AUSTEN (167).  
 Upper Burmah:—New species of *Helix* and *Cyclophorus*; MARTENS (279).  
 Annam:—*Amphidromus eudeli*, n. sp.; ANCEY (16).  
 Laos:—New species of *Scabrinia* and *Dioryx*; MOELLENDORFF (311).  
 Cochinchina:—*Amphidromus fultoni*, n. sp.; ANCEY (16).  
 Malay Peninsula:—Land-shells from, with *Nanina* (*Macrochlamys*?) *diadema*, n. sp.; DALL (105).  
 Andamans:—New species of *Trochomorpha*; FULTON (158).

## 14. Indo-Malay Region.

- Sumatra:—Fresh-water shells of, with new species of *Corbicula*, *Isidora*, *Limnaea*, *Melania*, *Pachydromia*, *Pisidium*, *Planorbis*, *Unio*, and *Vivipara*; MARTENS (281): New species of *Microcondylaea*, *Unio*, and *Melania*; STRUBELL (448).  
 Java:—Fresh-water shells of, with new species of *Ancylus*, *Cyrena*, and *Stenothyra*; MARTENS (281): *Melania strigata*, n. sp.; STRUBELL (448): New species of *Helicarium*, *Sitala*, *Kaliella*, *Lamprocystis*, *Ariophanta*, *Inozonites*, *Patula*, *Acanthinula*, *Plectotropis*, *Chloritis*, *Bulinus*, *Boysidia*, *Hypselostoma*, *Clausilia*, *Opeas*, *Tornatellina*, *Carychium*, *Leptopoma*, *Lagochelus*, *Ditropis*, *Pupina*, *Alyceus*, *Palatina*, *Diplommatina*, and *Georissa*; MOELLENDORFF (312): *Vaginula strubelli*, anatomy of; SIMROTH (422).  
 Bali and neighbourhood:—Fresh-water shells; MARTENS (281).  
 Lombok:—*Parmarion everetti* and *P. intermedium*, n. spp.; COLLINGE (87).  
 Flores:—Fresh-water shells of, with a new species of *Neritina*; MARTENS (281): Two new species of *Amphidromus*; FULTON (157): New species of *Arinia*, *Diplommatina*, *Pupina*, *Registoma*, and *Xesta*; SMITH (429).  
 Adonara I.:—*Melania adonare*, *Neritina confluens*, n. spp.; MARTENS (281).  
 Timor:—Fresh-water shells of, with new species of *Isidora* and *Melania*; MARTENS (281).  
 Sumba I.:—*Amphidromus consobrinus*, n. sp.; FULTON (157).  
 Borneo:—Fresh-water shells of; MARTENS (281): *Vaginula borneensis*, n. sp.; SIMROTH (312): Land and freshwater, with *Xesta baramensis*, n. sp.; KOBELT (246): *Rhaphaulus kikenthali*, n. sp.; KOBELT (247).

## 15. Philippine Region.

- Philippines:—New species of *Leptopoma*, *Tuheitia*, *Platyrhaphis*, *Har-gravesia*, *Moulinia*, and *Diplommatina*; MOELLENDORFF (311): Distribution and catalogue of *Cochlostyla*; HIDALGO (200).

## d. AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

Celebes:—The fauna of the lakes of Celebes, with descriptions of new species of *Miratesta*, *Protancylus*, *Vivipara*, *Melania*, and *Tylomelania*; SARASIN (405): Freshwater shells of, with new species of *Assiminea*, *Corbicula*, *Isidora*, *Melania*, *Modiola*, and *Stenothyra*; MARTENS (281): Land and freshwater, with new species of *Arinia*, *Helicarion*, *Leptopoma*; KOBELT (246): *Clausilia* from, with two new species; SYKES (457): New species of *Everettia*, *Vitrinoconus*, and *Dendrotrochus*; KOBELT (247): *Lagocheilus reticulatum*, n. sp.; MOELLENDORFF (311).

Halmahera:—New species of *Helicarion*, *Cyclotus*, and *Pupina*; KOBELT (247): *Helix* (*Nanina*) *halmaherica*, n. sp.; KOBELT (288): Land and freshwater, with new species of *Cyclotus*, *Helicarion*, *Helicina*, *Leptopoma*, *Pterocylus*; KOBELT (246): *Vaginula djiloloensis*, n. sp.; SIMROTH (422).

Batchian:—Land mollusca, with *Papuina ohlendorffi*, n. sp.; KOBELT (246).

Moluccas: Freshwater shells of; MARTENS (281).

Tuom I.:—*Helix* (*Geotrochus*) *wiegmanni*, n. sp., MARTENS (285).

Bismarck Archipelago:—*Takeitia tessellata*, n. sp.; MOELLENDORFF (311).

New Pommern:—*Aneitella berghi*, n. sp.; PLATE (376).

Talaut I.:—Land and freshwater mollusca with *Obbina meyeri*, n. sp.; MOELLENDORFF (308).

Misool:—*Unio misoolensis*, n. sp.; SCHEPMAN (406).

New Guinea:—Land-shells from, with n. spp. of *Adelomorpha*, *Chloritis*, *Ditropopsis* (n. gen.), *Lagocheilus*, *Palaina*, *Papuina*, *Perrieria*, *Pupinella*, *Rhytida*, and *Trochonanina*; SMITH (430): *Papuina lintere*, n. sp.; MOELLENDORFF (310): *Mychopoma exul*, n. sp.; MOELLENDORFF (311): *Helix naso*, *Calycia crystallina*, notes on; MARTENS (285): New species of *Flammulina* and *Sitala* (?); HEDLEY (190).—New Guinea and neighbouring islands: Shells from, with new species of *Rhytida*, *Macrochlamys*, *Ariophanta*, *Chloritis*, *Papuina*, and *Truncatella*; SMITH (427).

17. *Australian Region.*

Queensland:—*Pupisoma circumlitum*, n. sp.; HEDLEY (190): *Helix* (*Hadra*) *yeppoonensis*, n. sp.; BEDDOME (27): *Pupina bidentata*, n. sp.; BEDDOME (26).

18. *Austro-Polynesian Region.*

New Hebrides:—*Omphalotropis varians*, n. sp.; MOELLENDORFF (314).

Vitilevu:—New species of *Diancta*; MOELLENDORFF (311).

19. *Polynesian Region.*

Rotuma I.:—Land and freshwater, with new species of *Charopa*, *Omphalotropis*, *Partula*, *Rhytida*, and *Succinea*; SMITH (431).

Moorea:—*Omphalotropis geometrica*, n. sp.; MOELLENDORFF (314).

Duke of York I.:—*Omphalotropis duacalis*, n. sp.; MOELLENDORFF (314).

Pelew Is.:—*Helicina rabei*, n. sp.; PILSBRY (365) [= *H. rufocallosa*; ANCEY (17)]: New species of *Omphalotropis*; MOELLENDORFF (314).

Koror:—*Omphalotropis catenata*, n. sp.; MOELLENDORFF (314).

Carolines:—New species of *Palaina*; MOELLENDORFF (311): New species of *Omphalotropis* and *Diadema*; MOELLENDORFF (314).

Hawaiian Islands:—*Agriolimax bevenoti*, *Amalia babori*, n. spp.; COLLINGE (89): New species of *Vitrea* (?), *Kaliella*, and *Succinea*; SYKES (459): *Leptachatina approximans*, n. sp.; ANCEY (19): *Amastra durandi*, n. sp.; ANCEY (18): Bibliography; SYKES (460).

## 20. Neozelanian Region.

New Zealand:—Revision of Athoracophoridae, with *A. dendyi*, n. sp.; SUTER (452): *Flammulina (Phenacohelix) ponsonbyi*, n. sp.; SUTER (455): *Janella schuurslandi*, n. sp.; PLATE (376): New species of *Endodonta* and *Flammulina* from; MURDOCH (323).

Lord Howe Island: *Endodonta waterhousii*, n. sp.; HEDLEY (190).

Stewart Island:—Land-shells from; SUTER (453).

## e. NEANTARCTIC ZONE.

## 21. Patagonian Region.

Uruguay:—New species of *Ancylus* and *Pisidium*: PILSBRY (356): New species of *Bulinulus*; PILSBRY (355).

Argentine Republic:—New species of *Bulinulus* and *Ancylus*; ANCEY (12).

## 22. Chilian Region.

[None.]

## f. NEOTROPICAL ZONE.

## 23. Peruvian Region.

Peru:—*Bulinulus (Drymæus) baroni*, n. sp.; FULTON (158): *Helix kettneriana*, n. sp.; MARTENS (285): New species of *Bulinulus* and *Drymæus*; PILSBRY (355): *Bulinulus coraformis*, n. sp.; PILSBRY in TRYON (476): *Bulinulus moniezi*, n. sp.; DAUTZENBERG (113).

## 24. Columbian Region.

Colombia: *Labyrinthus assimilians*, n. sp.; SMITH (425): *Bulinulus krebsianus*, n. sp.; PILSBRY in TRYON (476).

Ecuador: Land and freshwater of, with *Helix (Isomeria) wolfs*, n. sp.; REIBISCH (389): *Cyclophorus vesconesi*, *Dryptus flori*, n. spp.; JOUSSEAUME (231, 232).

## 25. Brazilian Region.

Brazil:—New species of *Streptaxis*; PILSBRY (360): *Bulinulus eudiopius* (Ihering), n. sp.; PILSBRY in TRYON (476): *Bulinulus bouvieri*, Pernambuco, n. sp.; DAUTZENBERG (113).

## 26. Mexican Region.

Central America:—The genera *Bulinulus*, *Simpulopsis*, the family *Cylindrellidae*, and new species of *Celocentrum* and *Holospira*; MARTENS (283).

Costa Rica: Land and freshwater of; BIoLLEY (40): *Oleacina underwoodi*, n. sp.; FuLTon (158).

Mexico:—New species of *Celocentrum*, *Eucalodium*, and *Schazicheila*; DaLL (107): New species of *Helix* (*Lysinoe*) and *Polygyra*; DaLL (108).

Lower California: New species of *Bulimulus*; PILSBRY (362).

## 27. Caribbean Region.

Martinique: *Bulimulus chrysaloides*, n. sp.; PILSBRY (355).

Bahamas: Two new species of *Cerion*; PILSBRY & VANATTA (371).

Guadelupe: *Bulimulus semicinctus*, n. sp.; PILSBRY in TRYON (476).

## g. NEARCTIC ZONE.

## 28. American Region.

United States:—New *Unionide* from Alabama, Florida, North Carolina, and Virginia; WRIGHT (526): Check-list of land-shells commenced; PILSBRY (366).—North America: Notes on species of *Agriolimax* and *Prophysaon*; COCKERELL (84).—Kentucky: *Carychium stygium*, n. sp., in Mammoth Cave; CaLL (67).—Great Smoky Mts., U. S. A.: *Polygyra ferrissi*, n. sp.; PILSBRY (369).—Texas: *Holospira hamiltoni*, n. sp.; DaLL (106).—Idaho: *Hemphillia camelus*, n. sp.; PILSBRY & VANATTA (372): New variety of *Helix devia*; HEMPHILL (191).—Illinois: Land and freshwater shells from; BaKER (22).—Maine: *Planorbis nautilus* discovered in; WaLKER, Nautilus, x, p. 117; also in Ontario, HANHAM, *t. c.* p. 131.—Maine: Freshwater shells of; NYLANDER, Nautilus, xi, p. 9.—Charleston, S. C.: *Cochlicella ventricosa* and other species; MAZYCK (292).—Louisiana: Freshwater shells from; FRIERSON (154).—Florida: *Unio walkeri*, n. sp.; WRIGHT (524): Three new species of *Unio*; WRIGHT (523).

## 29. Californian Region.

New Mexico:—*Polygyra rhyssa*, n. sp.; DaLL (103 A): *Holospira cockerelli*, n. sp.; DaLL (107): *Pupa gabbii*, var., in; COCKERELL, Nautilus, x, p. 143.

## 30. Canadian Region.

Canada:—*Planorbis nautilus* in; TaYLoR (463).—Lake Superior, Canada: *Unio superiorensis*, n. sp.; MARSH (276).—Quebec: Land-shells from neighbourhood; HANHAM (182).

Greenland:—Land-shells from; DRYGALSKI (130), vol. ii, p. 155: Freshwater, *t. c.* p. 175.

## MARINE MOLLUSCA.

### 1. Arctic Province.

Arctic:—The Pelagic Mollusca of the arctic and antarctic regions; OHUN (77).

Spitzbergen:—Marine shells with *Neptunea sachsenheimi*, n. sp.; KIMAKOWICZ (244).

Greenland:—Gasteropods, pelecypods, pteropods and cephalopods; DRYGALSKI (130), vol. ii, pp. 185–193: Pteropods of Karajak Fiord, *t. c.* pp. 277 & 278.

2. *Boreal Province.*

Newfoundland:—*Chlamys costellata*, n. sp.; VERRILL (483).

Norway:—GRIEG (172).—Tromsø: Seventeen species of *Nudibranchiata*; KRAUSE (253): SCHNEIDER (409).

3. *Celtic Province.*

British Islands:—Distribution of many species, with notes; MARSHALL (277): Notes on some marine shells; EDWARDS (132).—Devonshire: *Spirula peronii* found on beach at Barricane; BULLEN, Sci. Gossip, iv, p. 150.—S. Wales: Marine shells; GAIN (160).—Scilly Isles: Shells from; MARSHALL (278).—Essex: *Crepidula fornicata* from; CROUCH (100).—Liverpool and Isle of Man: Occurrence of several species; HERDMAN (193).—Berwick: Marine shells from near Alnmouth; THEW (465).—List of Mollusca of Loch Fyne; SCOTT (410).—Leith: Mollusca from excavation at; GOODCHILD (169).—Ballycastle: Shells dredged off, including some rare species; CHASTER (74).—Irish Sea: Mollusca from; Rep. Brit. Assoc. 1896, p. 442.—Irish Coast: *Adeorbis unisulcatus*, n. sp.; CHASTER (73).—Ireland: *Tellina radiata* on beach; BULLEN, Sci. Gossip, iv, p. 150.—Rathlin Island: Marine shells from; CHASTER (75).—Rockall Island: Mollusca of neighbourhood; NICHOLLS (329).

Baltic:—Fauna of the Baltic with some reference to the Mollusca; BRANDT (59).

4. *Lusitanian Province.*

Sargasso Sea:—*Litiopa* of; LOCARD (263).

Azores:—New species of *Aemæa*, *Aliceia*, *Amphirissoa*, *Amussium*, *Arca*, *Arcinus*, *Basilissopsis*, *Cardium*, *Cerithiella*, *Chlamys*, *Cocculina*, *Cuspidaria*, *Cyclostrema*, *Diplodonta*, *Eulima*, *Leda*, *Malletia*, *Monia*, *Myrina*, *Niso*, *Pleurotoma*, *Poromya*, *Puncturella*, *Thracia*, *Tarborilla*, *Turricula*, *Verticordia*; DAUTZENBERG & FISCHER (116–118): New species of *Actæon*, *Bela*, *Belomitra*, *Clionella*, *Columbella*, *Meyeria*, *Natica*, *Oocorys*, *Pedicularia*, *Pleurotoma*, *Stylifer*, *Surcula*, *Thesbia*, *Trophon*, *Xenophora*; LOCARD (259): *Scalaria polygyrella*, n. sp.; LOCARD (260): *Berthella edwardsii*, n. sp.; VAYSSEIRE (480): New species of *Scalaria* and *Mathildia*; DAUTZENBERG & BOURY (114, 115).

Canaries:—New species of *Belomitra*, *Clathurella*, *Marginella*; LOCARD (259).

Madeira:—Catalogue with descriptions of new species of *Actis*, *Amphisphyræ*, *Bittium*, *Cæcum*, *Cylichna*, *Coralliophaga*, *Doridium*, *Eulima*, *Montacuta*, *Murex*, *Nassa*, *Natica*, *Ostomia*, *Philine*, *Pleurobranchus*, *Scalaria*, *Schismope*, *Teredo*, *Trophon*; WATSON (503).

Senegal: New species of *Aceras*; LOCARD (259): *Cadulus senegalensis*, n. sp.; LOCARD (260).

W. Africa:—New species of *Dentalium*; LOCARD (261).

N. W. Africa:—New species of *Bittium* (?), *Bulla*, *Euthria*, *Fusus*, *Lacuna*, *Marginella*, *Mesalia*, *Mitra*, *Murex*, *Natica*, *Persicula*, *Pleurotoma*, *Trophon*, *Turbonilla*; LOCARD (259).

Morocco:—New species of *Bela*, *Clionella*, *Columbella*, *Eulimella*, *Gibberula*, *Latiromitra*, *Marginella*, *Natica*, *Neptunia*, *Oocorys*, *Parthenina*, *Pleurotoma*, *Pleurotomella*, *Ringicula*, *Thesbia*, *Volutella*; LOCARD (259): *Scalaria mirifica*, n. sp.; LOCARD (260).

Alboran I.:—A list of the Mollusca; RICHARD & NEUVILLE (391).

France:—List of Mollusca collected on the N. coast; DOLLFUS (124): *Cuspidaria striolata*, n. sp.; LOCARD (265): Marine shells; DAUTZENBERG



(112).—Normandy: Thirty marine species; FAUVEL (137).—Gulf of Gascony: New species of *Cadulus*; LOCARD (260): New species of *Bela*, *Onchidiopsis*; LOCARD (259).—Marseilles: New species of *Cerithiopsis*, *Pleurotoma*, *Stylopsis*; LOCARD (259).—Marseilles and neighbourhood: Several notes on marine molluscs by various authors, in *Ann. Mus. Marseilles*, v, pt. i.

Spain:—New species of *Aceras*, *Bela*, *Belomitra*, *Gibberula*, *Neptunia*, *Neverita*, *Parthenina*, *Pleurotoma*, *Pleurotomella*, *Pseudomurex*, *Raphitoma*, *Taranis*, *Tornatina*, *Turbonilla*, *Volutella*; LOCARD (259).—Cape Finistère: *Cadulus monterosatoi*, n. sp.; LOCARD (260).

Portugal:—New species of *Assiminopsis*, *Bela*, *Mangilia*, *Natica*, *Pleurotoma*, *Pleurotomella*, *Pyramidella*, *Tornatina*; LOCARD (259): *Scalaria dissoluta*, n. sp.; LOCARD (260): Marine mollusca; NOBRE (331).

Gulf of Naples:—*Phyllobranchus borgnini*, n. sp.; TRINCHESE (473): *Tylodinella tranchesii*, n. sp.; MAZZARELLI (293).

Adriatic:—Molluscan fauna, with list of species; BRUSINA (63).

### 5. Aralo-Caspian Province.

[None.]

### 6. West African Province.

Cape Verde Is.:—New species of *Bulla*, *Clathurella*, *Marginella*, *Oliva*, *Philine*, *Scalaria*, *Tectarium*; LOCARD (259): *Scalaria dissoluta*, n. sp.; LOCARD (260).

### 7. South African Province.

S. Africa:—Addenda to fauna with new species of *Ancilla*, *Apicalia*, *Basterotia*, *Bullia*, *Bullina*, *Calliostoma*, *Cardium*, *Cerithiopsis*, *Cioniscus*, *Clathurella*, *Columbella*, *Cytherea*, *Donax*, *Eulima*, *Fulgur*, *Haminea*, *Marginella*, *Nassa*, *Natica*, *Pandora*, *Pectunculus*, *Pleurotoma*, *Rissoa*, *Scintilla*, *Solariella*, *Tellina*, *Turbo*, and *Venus*; SOWERBY (433).

Mozambique:—*Oscanius petersi*, n. sp.; BERGH (31).

Saint Paul Island:—Two new species of *Condylocardia*: BERNARD (33).

### 8. Indo-Pacific Province.

Mauritius (?):—*Scalaria sowerbyi*, n. sp.; CLESSIN (288).

E. Africa (including Zanzibar):—Brackish water molluscs, with *Melampus hypoleuca*, n. sp.; MARTENS (282).

Querimba Islands:—*Pleurobranchus mobii*, n. sp.; VAYSSIÈRE (480).

Red Sea:—*Scalaria klunzingeri* and *S. jickeli*, n. spp.; CLESSIN (288): *Murex tribulus*, a Red Sea species, occurring in Lake Ismailia; BAVAY (25).

Arabian Sea:—New species of *Dosinia* and *Pectunculus*; MELVILL (298).

Persian Gulf:—New species of *Columbella*, *Coralliophila*, *Ethalia*, *Eulima*, *Leucotina*, *Mitra*, *Monilea*, *Nassa*, *Natica*, *Sistrum*, and *Turritella*; MELVILL (298).

Mekran coast:—New species of *Calliostoma*, *Chione*, *Dentalium*, *Donax*, *Elusa*, *Ethalia*, *Fissurella*, *Gibbula*, *Marginella*, *Monilea*, *Nassa*, *Scalaria*, *Syrnolu*, *Tapes*, *Tellina*, *Terebra*, *Thalotia*, and *Yoldia*; MELVILL (298).

Karachi:—*Plecotrema sykesii*, n. sp.; MELVILL (297).

Bay of Bengal and the Arabian Sea:—Numerous Gastropods and Pelecypods figured; ALCOCK & ANDERSON (5).

Indian Ocean:—*Pleurobranchus brockii*, n. sp.; BERGH (31).—Bintang, near Singapore: *Psammotellina pallens*, n. sp.; MARTENS (281).—Anda-

man Islands: Ninety-seven species from, with new species of *Drillia*, *Imbricaria*, *Nassa*, *Turritella*, and *Ancilla*; MELVILL & SYKES (302).

Philippines:—*Oscanius semperi*, *Pleurobranchus perrieri*, n. spp.; VAYSSIÈRE (480): *Bulla subaustralis*, n. sp.; MABILLE (273): *Pleurobranchus giardi*, n. sp.; VAYSSIÈRE (481): *Cassia Crossei*, n. sp.; HIDALGO (199): *Dentalium letsonae*, Sharp & Pilsbry, n. sp.; PILSBRY in TRYON (475): New species of *Oscaniella* and *Oscaniopsis*; BERGH (31).

Borneo:—Brackish-water shells of, with *Psammotellina semmelinki*, n. sp.; MARTENS (281).

Sumatra:—Brackish-water shells of, with new species of *Corbicula*, *Littorina*, *Melania*, and *Pachydrobia*; MARTENS (281).

Java:—Brackish-water shells of, with new species of *Cyrena* and *Psammotellina*; MARTENS (281).

Bali and neighbourhood:—Brackish-water shells of; MARTENS (281).

Flores:—Brackish-water shells of, with new species of *Cassidula*, *Neritina*, and *Psammobia*; MARTENS (281).

Timor:—Brackish-water shells of, with a new species of *Melania*; MARTENS (281).

Celobes:—Parasitic mollusca, with *Stylifer celebensis*, n. sp.; KÜKENTHAL (256): Brackish-water shells of, with new species of *Assimineae*, *Corbicula*, *Melania*, and *Modiola*; MARTENS (281): Brackish-water mollusca; KOBELT (246).—Macassar: *Psammobia denickei*, n. sp.; MARTENS (281).

Batchian:—Brackish-water mollusca; KOBELT (246): *Cassidula triparietalis*, n. sp.; MARTENS (281).

Ternate: On *Scutus* and a collection of *Nudibranchiata*, with *Doridium alboventrale*, n. sp.; BERGH (30): Parasitic mollusca, with *Thyca pellucida*, n. sp.; KÜKENTHAL (256).

Halmahera:—Brackish-water mollusca: KOBELT (246).

Ceram:—*Cassidula triparietalis*, n. sp.; MARTENS (281).

Amboyna:—*Berthella brocki*, n. sp.; VAYSSIÈRE (480).

Moluccas:—New species of *Oscanius* and *Oscaniella*; BERGH (31): Brackish-water shells of; MARTENS (281).

New Britain:—*Nassa camelus*, n. sp.; MARTENS (285).

Marquesas Islands:—New species of *Lotorium* and *Cardium*; SOWERBY (434).

Tahiti:—*Bulla subaustralis*, n. sp.; MABILLE (273).

Lifu:—New species of *Cithara*, *Clathurella*, *Daphnella*, *Mangilia*, and *Mitra*; HERVIER (196).

Loyalty Islands:—Shells from, with new species of *Drillia*, *Odostomia*, *Elusa*, and *Olivella*; MELVILL & STANDEN (301).

## 9. Australo-Zealandic Province.

Australia:—Critical remarks on many marine species, with new species of *Cuspidaria*; TATE (462): New species of *Cypraea*; KENYON (239).

West Australia:—*Doris imperialis*, n. sp.; KENT (238).

Queensland:—*Adeorbis sigaretinus*, n. sp.; PILSBRY (359).

East Australia:—*Voluta (Ternivoluta) studei*, n. sp.; MARTENS (285).

South Australia:—Polyplacophora from, with new species; BEDNALL (29).

New South Wales:—New species of *Corbula* and *Tutea*; PILSBRY (359).

Tasmania:—*Arcopecten recens*, n. sp.; TATE (461): Notes on some marine mollusca; KENYON (240).

New Zealand:—Polyplacophora from, with a new species of *Ischnochiton*; SUTER (450): *Trochidae* of, with *Gibbula micans*, n. sp.; SUTER (454): Three n. spp. of *Scalaria*; CLESSIN (288).

Stewart Island:—*Philobrya filholi*, *Hochstotteria trapezina*, n. spp.; BERNARD (34): Two new species of *Condylocardia*; BERNARD (33).

10. *Japonic Province.*

Japan:—New species of *Ancillaria*, *Columbella*, *Lippistes*, and *Voluta*; MARTENS (285): *Oscaniopsis compta*, n. sp.; BERGH (31): *Crenella japonica*, n. sp.; DALL (110): New species of *Bulla*; MABILLE (273).

11. *Aleutian Province.*

Alaska: New species of *Crenella*, *Malletia*, and *Modiolaria*; DALL (110): *Pecten davidsoni*, n. sp.; DALL (109).

British Columbia and islands off coast:—New species of *Cadulus*, *Crenella*, *Cythara*, *Eucosmia*, *Leda*, *Macoma*, *Malletia*, *Modiolaria*, *Molleria*, *Mumiola* (?), *Nucula*, *Odontostomia*, *Rissoina*, and *Yoldia*; DALL (110).

12. *Californian Province.*

West coast of U. S. A.:—New species of *Pecten* and *Sigaretus*; DALL (109): *Dentalium dalli*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

California:—*Uvanilla regina*, off coast of; STEARNS (440): Four new species of *Dentalium*; PILSBRY in TRYON (475): New species of *Malletia*, *Odontostomia*, and *Yoldia*; DALL (110).—Bollinas, California: Marine shells from; WOOD (521).—Monterey Bay: Marine shells of: KING, *Nautilus*, xi, p. 23.

Oregon:—*Dentalium simplex*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

Washington, State of:—New species of *Mucoma*, *Malletia*, and *Yoldia*; DALL (110).

13. *Panamic Province.*

Ecuador:—*Dentalium aequatorium*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

Panama:—*Dentalium innumerable*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

Mexico:—*Scalaria mexicana*, n. sp.; CLESSIN (288).

Gallapagos Islands: *Dentalium brevicornu*, Sharp and Pilsbry, n. sp.; PILSBRY in TRYON (475).

14. *Peruvian Province.*

Chili:—*Chitonida*, with *Tonicia calbucensis*, n. sp.; PLATE (373): A new species of parasitic Gastropod within the body-cavity of an Echinoderm (*Chirodota*); LUDWIG (272).

West Coast of S. America:—*Mitra semigranosa*, n. sp.; MARTENS (285).

S. America: Descriptions of species collected by a Spanish Expedition reprinted by HIDALGO (201).

15. *Antarctic Province.*

Antarctic:—The pelagic Mollusca of the Arctic and Antarctic regions; CHUN (77).

16. *Patagonian Province.*

Uruguay:—New species of *Corbula*, *Crassatella*, *Mesodesma*, *Ocenebra*, *Semele*, *Thracia*, *Turbonilla*, and *Urosulpinx*; PILSBRY (356): Marine shells from, with new species of *Bullia* and *Halistylus*, and several *nomina nuda*; PILSBRY (364).

## 17. Caribbean Province.

Brazil:—Marine shells from Bahia, with *Mactrella iheringi*, n. sp.; DALL (103): List of Mollusca of the Island of St. Sebastian; IHERING (219): *Arcidae* and *Mytilidae* of, with *Modiola martensi*, n. sp.; IHERING (218): Species of *Mactra*, *Venus*, *Ostrea*, *Mytilus*, *Cardium* (?), and *Tagellus*, found in a Cemetery at Lomas de Zamora; VALENTIN (479): *Pleurobranchæa inconspicua*, n. sp.; BERGH (31).

Brazil and Uruguay:—*Columbella brasiliiana*, n. sp.; MARTENS (285).

West Indies:—Two new species of *Dentalium*; PILSBRY in TRYON (475): New species of *Chlamys* and *Cyclopecten*; VERRILL (483).

Bahamas:—*Pleurobranchæa agassizi*, n. sp.; BERGH (31).

Antilles:—*Pleurobranchus crossei*, n. sp.; VAYSSIÈRE (481).

## 18. Transatlantic Province.

Atlantic coast of N. America:—*Cyclostrematidae* and allied forms, with n. sp. of *Granigyra*, *Choristella* (n. gen.), *Circulus*, *Cyclostremella* (n. gen.), *Leptogyra* (n. gen.), *Lissospira* (n. gen.), *Molleropsis* (n. gen.), *Pseudotorella*, *Tharsiella* (n. gen.), and *Vitrinella*; BUSH (66).

Atlantic coast of United States:—*Ledidae* and *Nuculidae*, with new genera, and n. spp. of *Ledella*, *Neilonella*, *Tindaria*, and *Yoldiella*; VERRILL and BUSH (486): New species of *Cyclopecten* and *Hyalopecten*; VERRILL (483).

Florida:—Marine shells from; WHITE, *Nautilus*, xi, p. 31: Supposed gigantic Cephalopod; VERRILL (484): Contradicted by VERRILL (485).—Key West: *Ianthina*; SIMPSON (416).

## GEOLOGICAL.

N.B.—The same remarks apply here that are given at the beginning of the preceding section.

Lower-Languedoc:—Paleontology of, with new species; ROMAN (396): Paleontology of Rosignano and Vignale, with new species; ALESSANDRI (8).

## 1. POST-TERTIARY.

British Isles:—*Hygromia umbrosa* (new to Britain) and other mollusca of cave deposits; KENNARD & WOODWARD (236).—Marine shells from Raised Beach, Portrush; STEWART, *Irish Natural*. vi, p. 287.—List of Mollusca from raised beach and glacial beds in Ayrshire; SMITH, J. (432).—Arctic shells from Elie; GEIKIE, *P. Geol. Ass.* xv, p. 151.—Mollusca from Boulder-clay in Ayrshire; READE (386).—Mollusca from the Kennet Valley Deposits; KENNARD & WOODWARD (237).—Marine shells found in Drift series at High Levels in Ayrshire; SMITH, *Rep. Brit. Ass.* 1896, p. 799.—Mollusca from shell-bearing deposits in Kintyre; *Rep. Brit. Ass.* 1896, pp. 378–399.—Mollusca from Boulder Clay, Vale of Clwyd; READE, *Quart. J. Geol. Soc.* liii, pp. 342 & 344.

Germany:—Diluvial freshwater-deposit at Frankfurt; ROEDEL (394).—Fauna of the interglacial Travertine of Burgtonna and Gräfontonna in Thuringia; WEISS, *Zeitsch. Deutsch. geol. Ges.* xlix, pp. 683–689.—Mollusca from Interglacial beds at Marienburg and Dirschau, Prussia; JENTZSCH, *Jahrb. geol. Landesanst. Berlin*, xvi, pp. 165–208.

Denmark:—Kitchen-midden on Island of Föhr; SPLIETH (435).

Belgium:—Quaternary of Hoogstraten; MOURLON (322).

Norway:—List of species from raised beach, Varanger Fiord; STRAHAN, Quart. J. Geol. Soc. liii, p. 150.

Syria:—Pleistocene fauna of the fresh-water deposits, with some new species; BLANCKENHORN (44).

Ottawa:—Post-pliocene of Ottawa valley; AMI (11).

California:—New species of *Actæon*; STEARNS (441). Loess fossils, Des Moines; KEYES, Rep. Iowa Geol. Survey, vii, p. 344.

Franz Josef Land:—Mollusca from raised beaches; NEWTON & TEALL (326).

## 2. TERTIARY.

Occurrence and distribution of *Gryphæa easterházyi*, Pávay; KOCH (250).—Tertiary Mollusca with new species; SIMONELLI (415).—Pelecypods and Gastropods from Bulgaria, with new species of *Pecten*, *Mytilus*, *Velates* and *Cerithium*; BONTSCHOFF (49).—Tertiary *Gastropoda* from Hungary with *Hydrobia* (*Liobaikalia* ?) *sopronensis*, n. sp.; HOERNES (206).—Mollusca of Monte Postale; REGNY (493).—*Pecten* and *Lucina* from Barcelona and Tarragon, with new species; POCH & ALMERA (378).—Tertiary of Avignon, with new species; NICOLAS (330).—Tertiary fossils from Baden, with new species; HUG (214).—Marine and Land Mollusca from Venetian Alps, with new species; VINASSA DE REGNY (491).—Tertiary Mollusca of Piedmont and Liguria; SACCO (402).—Eocene and Neogene Faunas of Roumania, with new species; STEFANESCU (442).—New *Pteropoda* from Sivizzano; SIMONELLI (414).—Tertiary Mollusca from Denmark; RAVN (384).—Fauna of tertiary deposits in Buzeu, Roumania, with new, but undescribed, species; TEISSEYRE, Verh. geol. Reichsanst. 1897, pp. 159–166.—*Gastropoda* and *Pelecypoda* from the Tertiary of West Borneo, with n. g. and n. spp.; KRAUSE (255).—Tertiary Mollusca from the Philippines; MARTIN (287).—Lists of Tertiary Mollusca from Java; MARTIN (286).—Tertiary Mollusca of Patagonia with descriptions of 48 new species; IHERING, Revist. Mus. Paulista, ii, pp. 217–382, pls. iii–ix: for Summary of this paper see IHERING (217).—Tertiary of Patagonia with new species; PILSBRY (357).—Tertiary of Patagonia, *Ostreidae*, with new species; ORTMANN (337).—*Scaphopoda* from tertiary of San Domingo, with new species; PILSBRY & SHARP (370).—New species from Vancouver; MERRIAM (304).—Tertiary of Lower Moorabool, Victoria; HALL & PRITCHARD (181).—Tertiary Opisthobranchs of Australia, with new species; COSSMANN (93).—Australasian Mollusca, with new genera and species; HARRIS (184).—Fossils from Tertiaries near Melbourne; HALL & PRITCHARD (180).

Neogene:—Dalmatia, Croatia, Bosnia, Hertzgovina and Servia: Pontic and Levantine fauna, with new genera and species; BRUSINA (62).—New species from upper tertiary of France; MAYER-EYMAR (291).

Paleogene:—New species from lower tertiary of Egypt; MAYER-EYMAR (290).

Pliocene:—Pliocene of Barcelona; ALMERA, Bol. Ac. Barcelona, i, No. 14 & 15.—Land and freshwater Pliocene of Roussillon; DEPÉRET, Mem. Soc. geol. France, Pal. No. 3, p. 176.—Pliocene of Iwowski; ŁOMNICKI (267).—Fauna of the Diestian sands, with *Isocardia cor*; BERNAYS, Bull. Soc. Belge Geol. Mém. pp. 117–132, 1 pl.—*Chenopus uttingerianus* and *C. pespelecani* of the Italian Pliocene; VINASSA DE REGNY (490).—Levantine molluscan fauna of Rhodes, with new species; BUKOWSKI (64).—Pliocene fauna of the fresh-water deposits in Syria, with some new species; BLANCKENHORN (44).

Miocene:—Mollusca from Bellunesi; VINASSA DE REGNY (492).—Miocene of Lemberg; ŁOMNICKI (266).—Middle-miocene of Kostej, with new species; BOETTGER (47).—Miocene of Waldorf, &c., with new species; HILBER (202).—Tongrian of Liguria: Pelecypods with new species; ROVERETO

(400).—Land shells in miocene of Florida; PILSBRY (354).—Fossils from probable miocene in Victoria; DENNANT & MULDER (120).

Oligocene:—*Pelecypoda* and *Gastropoda* from Bavaria, with many new species; WOLFF (519).—Bernburg: Lower oligocene fossils; MERKEL & FRITSCH (303).—Itzehoe, Germany: Seventy-two marine species, with notes; REINHARD (388).—List of fossils from Moravia; RZEHAK, Verh. geol. Reichsanst. 1897, pp. 199–201.—*Hemistenotrema*, n. subgen. of *Helix*, with new species, from Upper Oligocene of Mainz; BOETTGER (46).—Note on *Cerithium ocirrhoe*, from Dax; VIGNAL (488).

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Texas; CRAGIN (96).—*Perisphinctes* from Somaliland; CRICK in DONALDSON-SMITH, Through Unknown African Countries, 1897, pp. 426–429.

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(471).—Carboniferous in Mississippi valley; KEYES (242).—Fossils of Poek County; KEYES, Rep. Iowa Geol. Survey, vii, pp. 331 & 332.

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† This sign is prefixed to references relating to fossil forms.

## DIBRANCHIATA.

- † *Acanthoteuthis speciosa*, Münster, note on specimen from Eichstädt, Bavaria; CRICK (97).  
 † *Belemnites* from Franz Josef Land; NEWTON & TEALL (326).  
*Octopus punctatus*, Gabb, Kamtschatka; JOUBIN, Mem. Soc. zool. France, x, p. 110, fig.  
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- † *Acanthoceras Cayeusi*, n. sp., from the Senonian of Elmes, near Lumbres, France; PARENT, Ann. Soc. geol. Nord, xxvi, pp. 135 & 136, fig.  
 † *Ammonites* from Franz Josef Land; NEWTON & TEALL (326): † *Ammonites*, aperture of; GLANGEAUD (164).  
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 † *Bosnites*, n. g., *clathratus*, n. sp., Trias of Bosnia; HAUSER (186), p. 269.  
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 † *Cleonoceras*, n. g., type *Ammonites cleon*, d'Orb., from the Albian of France; PARONA & BONARELLI, Palæontogr. ital. ii, p. 85.  
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 † *Fallotoceras*, n. g., type *Ammonites proteus*, d'Orb., from the Albian of the S. of France; PARONA & BONARELLI, Palæontogr. ital. ii, p. 89.  
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 † *Lenticeras*, n. g., for *Ammonites andii*, Gabb, from the Cretaceous of Venezuela; GERHARDT, N. Jahrb. Min. Beil. Bd. xi, p. 81.  
 † *Lophoceras*, n. g. of *Ammonites* from Callovien of Savoy; PARONA & BONARELLI, Mem. Ac. Savoie, vi, p. 122.  
 † *Nannitina*, n. subfam. for *Nannites*, Mojsisovics; DIENER, Pal. Ind. ser. 15, vol. ii, pt. 1, p. 66.  
 † *Neoptychites*, note on the genus; GROSSOUVRE, C.R. Soc. geol. France, ser. 3, xxiv, p. xxxiii.  
 † *Odontoceras*, n. g., from the Upper Jurassic of S. America; STEUER, Pal. Abh. vii, p. 164.  
 † *Pedioceras*, n. g., for *P. cundinamarcae*, n. sp., from the Aptian of Columbia; GERHARDT, N. Jahrb. Min. Beil. Bd. xi, p. 170.  
 † *Plesiotissotia*, n. g., for *P. michaleti*, n. sp.; PERON (349), p. 79.  
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 † *Ptychitina*, subfam. Mojsisovics, raised to family *Ptychitidae*; DIENER, Pal. Ind. ser. 15, vol. ii, pt. 1, p. 66.

- †*Puzosia*, on the genus; SARASIN (404).  
 †*Sequenziceras*, n. g., for *S. canavarii*, n. sp. from the Lias of Monte Calvi; LEVI, Boll. Soc. geol. Ital. xv, p. 272.  
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 †*Vishnuites*, n. subgen. of *Xenaspis*, Waagen, for *V. pralambha*, n. sp. from the Lower Trias of the Himalayas; DIENER, Pal. Ind. ser. 15, ii, pt. 1, p. 83 *et seq.*

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 †*Endoceras*, note on ectosiphon and apical end; HOLM, Geol. Foren. Stockholm Forh. xix, p. 171.  
 †*Nanno*, given as n. g. for *N. aulema*, n. sp., but previously described in Amer. Geol. xiv, pp. 205–208; CLARKE, Geol. Surv. Minnesota, iii, pt. 2, p. 769.  
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- Agriolimax*, notes on some species of; COCKERELL (283): Notes on some North American species; COCKERELL, Nautilus, xi, p. 76.  
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*Calycia crystallina*, New Guinea, anatomy and radula; MARTENS, Archiv Naturg. lxiii, p. 43, figg.  
*Clathropodium*, n. g. for *C. vitrineforme*, n. sp., Caucasus; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 117.  
*Euplecta*, notes on the genus, with *E. prestoni*, Ceylon, p. 177, n. sp. fig.; GODWIN-AUSTEN, P. Malac. Soc. London, ii, pp. 173-177: *E. colletti, scobinoides*, p. 234, Ceylon; SYKES, P. Malac. Soc. London, ii, figg.: n. spp.  
*Everettia möllendorffi*, Celebes; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 26: also in Abh. Senckenb. Ges. xxiv, p. 49, fig.: n. sp.  
*Helicarion pertenuis*, p. 30, *columellaris*, p. 31, *depressus*, p. 32, *subglobosus*, p. 33, Cameroons; AILLY (4), figg.: *H. küenthali*, Halmahera; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 25: also in Abh. Senckenb. Ges. xxiv, p. 42: *H. halmaherica*, Halmahera, p. 43, *minahassa, annularis*, Minahassa, p. 44; KOBELT, t. c. figg.: *H. perfragilis, fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 58: n. spp.  
*Helix (Nanina) [is a Xesta] halmaherica*, Halmahera; KOBELT (288), p. 834, fig.: n. sp.  
*Hyalinia (Polita) siraphora*, Caucasus; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 118: n. sp.  
*Inozonites imitator*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 65: n. sp.  
*Kaliella acutiuscula, sitaliformis, platyconus* (Bttg. MS), p. 59, *angigyra, convexoconica, ambliia, densetoria*, p. 60, *viridula, macrostoma, pisum*, p. 61, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: *K. salicensis*, p. 178, Ceylon; GODWIN-AUSTEN, P. Malac. Soc. London, ii, fig.: *K. konaensis*, Hawaiian Islands; SYKES, P. Malac. Soc. London, ii, p. 299: n. spp.  
*Lamprocyatis gedzeana*, p. 61, *fruhstorferi, circumlineata, subglobosa*, p. 62, *exigua, nana, radiatula, vitreiformis*, p. 63, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: *L. (?) sinhala, L. (?) nuwaraensis*, Ceylon; GODWIN-AUSTEN, P. Malac. Soc. London, ii, p. 178, fig.: n. spp.  
*Limax*, notes on two species of; COCKERELL (82).  
*Macrochlamys dohertyi*, New Guinea; SMITH, P. Malac. Soc. London, ii, p. 287, fig.: *M. (?) circumsculpta*, p. 235, Ceylon; SYKES, P. Malac. Soc. London, ii, fig.: n. spp.  
*Nanina (Macrochlamys ?) diadema*, Malay Peninsula; DALL, Nautilus, xi, p. 37: n. sp.  
*Parnarion everetti*, p. 778, *intermedium*, p. 779, Lombock; COLLINGE, P. Zool. Soc. London, 1897, figg.: n. spp.

- Polita notabilis*, p. 235, Ceylon; SYKES, P. Malac. Soc. London, ii, fig.: n. sp.
- Rhytida trobriandensis*, Trobriand Island; SMITH, P. Malac. Soc. London, ii, p. 287, fig.: *R. gardineri*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 519: *R. kapauensis*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 409, fig.: n. spp.
- Sitala javana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 58: *S. (?) sublimis*, British New Guinea; HEDLEY, Rec. Austral. Mus. iii, p. 47, fig.: n. spp.
- Spirotoxon elegans*, E. Africa; SIMROTH, SB. Ges. Leipzig, 1895-6, p. 152: n. sp.
- Thapsia curvatula*, Uluguru; MARTENS (282), p. 41, fig.: *T. sjostedti*, Cameroons; AILLY (4), p. 39, fig.: n. spp.
- Trichotoxon (Polytoxon) aurantiacum*, Pangani, E. Africa; SIMROTH, SB. Ges. Leipzig, 1895-6, p. 149: n. sp.
- Trochomorpha (Videna) andamanica*, Nevill MS, p. 212, *pseudosanis*, Nevill MS, p. 213, Andamans; FULTON, Ann. Nat. Hist. xx, figg.: n. spp.
- Trochonanina albolabiata*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 410, fig.: n. sp.
- Trochozonites reticulatus*, p. 43, *lindströmi*, p. 44, *suturalis*, p. 45, *hystrix*, p. 49, *pilosus*, p. 50, *turbinatus*, p. 51, *theeli*, p. 55, Cameroons; AILLY (4), figg.: n. spp.
- Urocyclus*, notes on the African species, SIMROTH, SB. Ges. Leipzig, 1895-6, p. 29.
- Vitrea (Anomphala) viridis*, Caucasus; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 118: *V. (?) molokaiensis*, *lanaiensis*, Hawaiian Islands; SYKES, P. Malac. Soc. London, ii, p. 298: n. spp.
- Vitrina nigrocincta*, Kilima-Njaro; MARTENS (282), p. 39, fig.: n. sp.
- Vitrinoconus celebesianus*, Celebes; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 26: also in Abh. Senckenb. Ges. xxiv, p. 45, fig.: n. sp.
- Xesta everetti*, p. 623, *polymorpha*, *subpolita*, p. 624, *melanoraphe*, p. 625, Flores; SMITH, Ann. Nat. Hist. xix.: *X. baramensis*, North Borneo; KOBELT, Abh. Senckenb. Ges. xxiv, p. 52, fig.: n. spp.

## ARIONIDÆ.

- Arion*: the genus and some European forms discussed; COLLINGE, P. Zool. Soc. London, 1897, pp. 439-450.
- Arion cæruleus*, England and Ireland; COLLINGE, l. c. p. 444: n. sp.
- Hemphillia camelus*, Idaho; PILSBRY & VANATTA, Nautilus, xi, p. 44: n. sp.
- Prophysaon*: notes on some North American species; COCKERELL, Nautilus, xi, p. 77.

## ENDODONTIDÆ.

- Charopa perryi*, *rotumana*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 520: n. spp.
- Endodonta waterhousei*, Lord Howe Island; HEDLEY, Rec. Austral. Mus. iii, p. 45, fig.: *E. (Charopa) vortex*, p. 160, *E. coma*, Gray, var. *multicostata*, p. 161, n. var., New Zealand; MURDOCH, P. Malac. Soc. London, ii, figg.: n. spp.
- Flammulina (Phenacohelix) perplexa*, p. 161, *F. (Allodiscus) mossi*, p. 162, New Zealand; MURDOCH, P. Malac. Soc. London, ii, figg.: *F. (Phenacohelix) ponsonbyi*, New Zealand; SUTER, P. Malac. Soc. London, ii, p. 285, fig.: *F. abdita*, British New Guinea; HEDLEY, Rec. Austral. Mus. iii, p. 47, fig.: n. spp.
- Patula (Pyramidula) javana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 65: n. sp.

## HELICIDÆ.

- Acanthinula perpusilla, tiluana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 66: n. sp.
- Austenia* [nom. præocc.], n. sect. of *Plectopylis*, for *P. clathratula*; GUDE, Sci. Gossip, iii, p. 300 [changed to *Sykesia*, p. 332].
- Cathaica funki*, Central Asia; ANCEY, Nautilus, xi, p. 16: n. sp.
- Chilanodon*, n. subgen. of *Helix* for *H. sibirica*, n. sp.; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 119.
- Chloritis pervicina*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 411, fig.: *C. fusco-purpurea*, Woodlark Island; SMITH, P. Malac. Soc. London, ii, p. 288, fig.: *C. tetragyra, fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 68: n. spp.
- Cochlostyla*, notes on some species of; HIDALGO, J. Conchyl. xlv, p. 213: Critical notes on many species of; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, pp. 121-126, 153-164.
- Cochlostyla*, catalogue of, with *C. pilsbryi*, n. n., for *C. cunctator*, Pilsbry non Reeve, p. 307, *quadrifasciata*, n. sp., p. 311, *solai*, n. sp., p. 315, *sowerbyi*, n. sp., p. 316; HIDALGO, J. Conchyl. xlv, pp. 237-353.
- Corilla colletti*, p. 233, *gudei*, p. 234, Ceylon; SYKES, P. Malac. Soc. London, ii, figg.: n. spp.
- Dendrotrochus*, note on value of; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 5.
- Dendrotrochus celebesianus*, Celebes; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 26: also in Abh. Senckenb. Ges. xxiv, p. 50: n. sp.
- Epiphragmophora arnheimi*, note on; PILSBRY, Nautilus, xi, p. 54.
- Epiphragmophora saltaria*, p. 9, *cryptomphala*, Argentine Republic, *trigammophora*, Bolivia and Argentine Republic, p. 10; ANCEY, Boll. Mus. Torino, xii: n. spp.
- Gonostoma (Drepanostoma) omphalospirum*, Hubei, China; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 29: n. sp.
- Helicella (Lejeania) chionobasis*, Somaliland; PILSBRY, P. Ac. Philad. 1897, p. 359: n. sp.
- Helix*, monograph completed by KOBELT in MARTINI & CHEMNITZ (288).
- Helix hetneriana*, Peru; MARTENS, Archiv Naturg. lxiii, p. 40, figg.: *H. haberhaueri*, Bulgaria; STURANY, Ann. Hofmus. Wien, xii, p. 112, fig.: *H. retteri*, Turkestan; ROSEN, Feuille Natural. An. xxvii, p. 170: *H. camerunensis, jugneri*, Cameroons; AILLY (4), p. 57, figg.: *H. watsoni*, Madeira; JOHNSON, J. Conch. viii, p. 429: n. spp.
- Helix nemoralis* and *H. hortensis*, notes on banding of; HORSLEY, J. Malac. vi, pp. 17-22: *Helix ericetorum*, Mueller, specific name of; KENNARD (234): reply by SMITH (424): *Helix devia*, new variety of; HEMPHILL, Nautilus, xi, p. 74.
- Helix (Geotrochus) wiegmanni*, Tuom I.; MARTENS, Archiv Naturg. lxiii, p. 41, fig.: *H. (Macularia) kebiriana*, p. 478, (*Xerophila*) *mortilleti*, p. 480, (*X.*) *arabophila*, p. 481, (*X.*) *doumerguei*, p. 482, (*X.*) *berberica*, p. 483, Oran; PALLARY, C.R. Ass. France, 1896, partie 2, figg.: *H. (Chilanodon) sibirica, (Trichia) verna*, p. 119, Sibe:ia, (*Trichia*) *podolica*, Russia, (*T.*) *annexa*, p. 120, (*T.*) *czekanowskii*, (*T.*) *eutheta*, p. 121, Siberia, (*T.*) *nothra*, Caucasus, (*Campylaea*) *ussuriensis*, p. 122, Siberia, (*Pomatia*) *intermissa*, Caucasus, p. 123, (*Levantina*) *placida*, Transcaucasia, p. 141; WESTERLUND, Ann. Mus. St. Petersb. 1897: *H. (Hadra) yeppoonensis*, Queensland; BEDDOME, P. Linn. Soc. N. S. Wales, xxii, p. 123, fig.: *H. (Camena) nettingi*, Upper Burmah; MARTENS, Nachrbl. Deutsch. malak. Ges. 1897, p. 178: *H. (Lysinoe) queretaroana, sebastiana*, Mexico; DALL, Nautilus, xi, p. 73: *H. (Isomeria) wolff*, Ecuador; REIBISCH, Abh. Ges. Isis, 1896, p. 56: *H. (Pomatia) bituminis*, Asia Minor, p. 49, *iesica*, Turkey in Asia,

- p. 50, *antiochiensis*, p. 51, *epidaphne*, Syria, *adanensis*, p. 52, *infidelium*, Turkey in Asia, p. 54, (*Xerophila*) *tarnacensis*, p. 55; ROLLE & KOBELT, Rossmässler's Icon. Suppl. Bnd. i, figg.: n. spp.
- † *Hemistenotrema quadrisinuosa*, n. subgen. of *Helix* and n. sp., from Upper Oligocene of Mainz; BOETTGER, Nachrbl. Deutsch. malak. Ges. 1897, p. 16.
- Labyrinthus assimilians*, Colombia; SMITH, J. Malac. vi, p. 26, fig.: n. sp.
- Obbina meyeri*, Talaut I.; MÖLLENDORFF, Abh. Mus. Dresden, vol. vi, No. 4, p. 1: n. sp.
- Oxychona* should be transferred from *Helices* to *Bulimuli*; PILSBRY, Nautilus, xi, p. 87.
- Papuina ohlendorffi*, Batchian; KOBELT, Abh. Senckenb. Ges. xxiv, p. 78, fig.: *P. kapauensis*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 412, fig.: *P. linteræ*, New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 30: *P. rufo-purpurea*, p. 288, *molesta*, p. 289, New Guinea; SMITH, P. Malac. Soc. London, ii, fig.: n. spp.
- Plectopylis smithiana*, India, p. 274, *affinis*, Assam, p. 276, *clathratuloides*, p. 332, Anamullay Hills; GUDE, Sci. Gossip, iii, figg.: *P. muspratti*, Assam, p. 10, *magna*, *lissochlamys*, Burma, p. 70; GUDE, loc. cit. iv, figg.: *P. linteræ*, Pegu; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 28: n. spp.
- Plectotropis leucomphala*, p. 66, *epiplatia*, *trichotrochium*, *ciliocincta*, p. 67, *schepmani*, p. 68, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: n. spp.
- Polygyra nelsoni*, Mexico; DALL, Nautilus, xi, p. 74: *P. ferrissi*, Great Smoky Mts., U.S.A.; PILSBRY, t. c. p. 92: *P. rhyssa*, New Mexico; DALL, t. c. p. 2: n. spp.
- Pseudiberus uniformis*, *anisopleurus*, Central Asia; ANCEY, Nautilus, xi, p. 17: n. spp.
- Sykesia*, n. sect. of *Plectopylis*, for *P. clathratula*; GUDE, Sci. Gossip, iii, p. 332.
- Tachea*, banding of shell in; BOYCOTT, Sci. Gossip, iv, p. 132.
- Trachycystis teretiuscula*, Pietermaritzburg; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 635, fig.: n. sp.
- Xerophila* divided into the following apparently new sections, *Xerofalsa*, *Xerosecta*, *Xeroplana*, *Xeroamanda*, *Xeromæsta*, *Xeroclausula*, *Xerolena*, *Xerotringu*, *Xeroampulla*, *Xerofusca*, *Xerovaga*, *Xeroalbina*, *Xeromica*, *Xerotricha*, *Xerocodia*, *Xeroplexa*, *Xerotropis*, *Xerocrassa*, *Xerolautata*, *Xerolincta*, *Xerolata*, *Xerovaria*, *Xerambigua*, *Xerolutea*, *Xeromagna*, *Xerolenta*, *Xerolaxa*, *Xerofriga*, *Xerogyra*, *Xerocincta*, *Xeropicta*, *Xerobulla*, *Xeromunda*, *Xerocauta*, *Xerovera*, *Xeroliassa*, *Xeroclivia*, *Xeronexa*, *Xerocochlea*, *Xeroptycha*, *Xeroacuta*; MONTEROSATO, Atti Acc. Palermo, ii, 33 pp.

### BULIMIDÆ, BULIMULIDÆ, and ORTHALICIDÆ.

- Amphidromus floresianus*, Flores, *consobrinus*, Flores and Sumba; FULTON, Ann. Nat. Hist. xx, p. 211, figg.: *A. fultoni*, Cochinchina, p. 62, *eudeli*, Annam, p. 63; ANCEY, Nautilus, xi: n. spp.
- Bulimulidæ*, monograph on, continued; PILSBRY in TRYON (476), xi.
- Bulimulus rushii*, *gorritiensis*, Uruguay, p. 18, *pachys*, Peru, *chrysaloides*, Martinique, p. 20, *glyptocephalus*, *sarcochrous*, Peru, p. 21; PILSBRY, P. Ac. Philad. 1897: *B. borellii*, Bolivia, p. 13, *polloneræ*, Argentina, p. 17; ANCEY, Boll. Mus. Torino, xii: *B. coraformis*, Peru, p. 15, *semicinctus*, Guadelupe, p. 45, *krebsianus*, Colombia, p. 63, *eudioptrus* (Ihering), Brazil, p. 89; PILSBRY in TRYON (476) xi, figg.: *B. hypodon*, p. 102, *lamellifer*, p. 103, Lower California; PILSBRY, Nautilus, x: n. spp.

- Bulinulus corumbaensis*, n. n. for *Bulinus amœnus*, Bonnet, non Pfr.: *B. angrandianus*, n. n. for *Bulinus radiatus*, Morelet, non Brug.; PILSBRY, P. Ac. Philad. 1897, p. 19: *B. subjussieuvi*, n. n. for *B. jussieuvi*, Hupé, non Pfr., p. 26: *B. buenavistensis*, n. n. for *B. corneus*, Lea, non Sby., p. 59; PILSBRY in TRYON (476), xi.
- Bulinulus (Drymæus) baroni*, Peru; FULTON, Ann. Nat. Hist. xx, p. 213, fig.: *B. (Goniostomus) bouvieri*, Pernambuco, p. 222, *B. (Bostryx) moniezi*, Peru (l), p. 224; DAUTZENBERG, J. Conchyl. xlv, figg.: n. spp.
- Bulinus ruga* and *B. bernieri* belong to *Diplomorpha*; ANCEY, Nautilus, xi, p. 26.
- Drymæus (Neopetræus) filiola*, Peru; PILSBRY, P. Ac. Philad. 1897, p. 22: n. sp.
- Dryptus flori*, Ecuador; JOUSSEAUME, Naturaliste, 1897, p. 265, n. sp.
- Hapalus catarractæ*, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 635, fig.: n. sp.
- Hyperaulax*, n. subgen. of *Bulinulus*, type *Bulinus ridleyi*; PILSBRY, P. Ac. Philad. 1897, p. 10.
- Oxychona* should be transferred to *Bulimuli* from *Helices*; PILSBRY, Nautilus, xi, p. 87.
- Partula lefeei*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 520, n. sp.: *P. eximia* = *P. macgillivrayi*; HARTMAN, Nautilus, xi, p. 44.
- Protyglyptus*, n. subgen. of *Bulinulus* for *B. pilosus*, and others; PILSBRY in TRYON (476) xi, p. 84.
- Pseudopartula*, note on, with list of species; PILSBRY, Nautilus, x, p. 109.

## BULIMINIDÆ, CYLINDRELLIDÆ, and PUPIDÆ.

- Buliminus castaneus*, p. 10, Samarkand, (*Zebirinus*) *malleolatus*, p. 34, Syria, (*Chondrulus*) *anomalous*, Samarkand, p. 61; WESTERLUND (510): *B. (Pachnodus) cirinifer*, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 637, fig.: *B. sordidulus*, Ukamba; MARTENS (282), p. 65, fig.: *B. retteri*, Turkestan; ROSEN, Feuille Natural. An. xxvii, p. 170: *B. (Pissamauella) mirabilis*, p. 34, (*P.*) *bentii*, (*P.*) *rotundus*, p. 35, (*Ovella*) *acutus*, (*O.*) *innocens*, p. 36, Socotra; SMITH, J. Malac. vi, figg.: *B. (Chondrulus) seadentatus*, p. 13, *libanicus*, p. 14; NAEGELE, Nachrbl. Deutsch. malak. Ges. 1897: *B. (Petræus) rollei*, Lycia, Turkey in Asia; KOBELT in Rossmüssler's Icon. Neue Folge, Supp. Bd. I, p. 57, fig.: *B. (Ena) tenuiliratus*, *tenggericus*, *prillwitzii*, p. 69, *thraustus*, p. 70, Java; MOELLENDOFF, Nachrbl. Deutsch. malak. Ges. 1897: n. spp.
- Boysidia boettgeri*, Java; MOELLENDOFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 70: n. sp.
- Cerion fordii*, p. 365, *pillsburyi*, p. 366, Bahamas; PILSBRY & VANATTA, P. Ac. Philad. 1897, figg.: n. spp.
- Clausilia (Euaxina) balaopsis*, p. 123, (*Serrulina*) *signifera*, p. 124, Caucasus; WESTERLUND, Ann. Mus. St. Petersb. 1897: *C. (Acrophædusa) schepmani*, *nubigena*, p. 71, *fruhstorferi*, p. 72, Java; MOELLENDOFF, Nachrbl. Deutsch. malak. Ges. 1897: *C. (Idyla) rebeli*, Bulgaria; STURANY, Ann. Hofmus. Wien, xii, p. 117, fig.: *C. makussarensis*, *pyrrha*, Celebes; SYKES, J. Malac. vi, p. 23, figg.: n. spp.
- C. balantensis*, n. n. for *C. celebensis*, Boettger non Smith; SYKES, l. c. p. 24.
- Calocentrum astrophorea*, Mexico; DALL, Nautilus, xi, p. 61: *C. gigas*, p. 267, *championi*, p. 269, Guatemala; MARTENS, Biol. Centr.-Amer. figg.: n. spp.
- Eucaloderum hippocastaneum*, Mexico; DALL, Nautilus, xi, p. 61: n. sp.
- Holospira claviformis*, p. 277, *fusca*, p. 281, Mexico; MARTENS, Biol. Centr.-Amer., figg.: *H. (Haplostemma) hamiltoni*, Texas; DALL, Nautilus,



- xi, p. 32: *H. (Haplostemma) cockerelli*, New Mexico; DALL, *t. c.* p. 61 : n. spp.  
*Hypselostoma fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 70 : n. sp.  
*Lauria fugoti*, Spain; WESTERLUND (510), p. 66 : n. sp.  
*Perriera minor*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 414, fig. : n. sp.  
*Pupidae*, radula of; GWATKIN (179).  
*Pupa (Paula) pereximia*, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 638, fig. : n. sp.

## STENOGYRIDÆ and ACHATINELLIDÆ.

- Achatina livingstonei*, Bechuanaland, *drakensbergensis*, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 636, figg. : *A. camerunensis*, Cameroons; AILLY (4), p. 64, fig. : *A. studleyi*, Old Calabar; MELVILL & PONSONBY, P. Malac. Soc. London, ii, p. 291, fig. : *A. chrysoleuca*, Somaliland; PILSBRY, P. Ac. Philad. 1897, p. 357 : n. spp.  
*Amatstra durandi*, Oahu; ANCEY, Naturaliste, 1897, p. 178 : n. sp.  
*Azeca elongata*, Taylor, note on; WEBB, J. Malac. vi, p. 14, fig.  
*Ganomidos*, nov. gen., for *Achatina shuttleworthi*; AILLY (4), p. 66.  
*Geostilbia stuhlmanni*, Rumsoro; MARTENS (282), p. 131, fig. : n. sp.  
*Hapalus kretschschmeri*, Kilina-Njaro, *suturalis*, Mgao; MARTENS (282), p. 129, figg. : *H. (?) sulcatus*, Cameroons; AILLY (4), p. 60, fig. : n. spp.  
*Leptachatina approximans*, Oahu; ANCEY, Naturaliste, 1897, p. 222 : n. sp.  
*Limicolaria donaldsoni*, *vanattai*, Somaliland; PILSBRY, P. Ac. Philad. 1897, p. 358: *L. kobelti*, Cameroons; AILLY (4), p. 79 : n. spp.  
*Nothapalus*, n. sect. of *Subulina* for *S. paucispira*; MARTENS (282), p. 124.  
*Opeus egens*, Cameroons; AILLY (4), p. 112: *O. curvicosta*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 89: *O. subvaricosum*, Rumsoro, p. 126, *limpidum*, Bukende, *streptosteloides*, Uganda, p. 128; MARTENS (282), figg. : n. spp.  
*Perideris kobelti*, W. Africa; PILSBRY, P. Ac. Philad. 1897, p. 503.  
*Pseudachatina martensi*, p. 95, *tiljevalli*, p. 98, Cameroons; AILLY (4), figg. : n. spp.  
*Pseudoglossula sjostedti*, p. 104, *duseni*, p. 107, Cameroons; AILLY (4), figg. : n. spp.  
*Stenogyra inculpta*, (*Riebeckia*) *decipiens*, Socotra; SMITH, J. Malac. vi, p. 37, figg. : n. spp.  
*Subulina tugelensis*, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 637, fig. : *S. pergracilis*, Bukende, p. 123, *conradti*, Usambara, p. 124; MARTENS (282), figg. : n. spp.  
*Tornatellina sundana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 90 : n. sp.

## SUCCINEIDÆ, ATHORACOPHORIDÆ, VAGINULIDÆ, and VERONICELLIDÆ.

- Amphikonora*, n. subgen., for *Athoracophorus marmoratus*; SUTER, P. Malac. Soc. London, ii, p. 256.  
*Aneitella berghi*, and its anatomy, New Pommern; PLATE, SB. Ak. Berlin, 1897, p. 141 : n. sp.  
*Athoracophorus dendyi*, New Zealand; SUTER, P. Malac. Soc. London, ii, p. 253, fig. : n. sp.  
*Janella schauinslandi*, and its anatomy, New Zealand; PLATE, SB. Ak. Berlin, 1897, p. 141 : n. sp.

- Succinea rotumana*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 521: *S. konaensis*, Hawaiian Islands; SYKES, P. Malac. Soc. London, ii, p. 299: n. spp.
- Vaginula*, new genus allied to *Vaginula*, with no type; SIMROTH, SB. Ges. Leipzig, 1895-6, p. 154.
- Vaginula*, anatomy; SIEGERT, Zool. Anz. xx, pp. 257-261: *V. gayi*, its anatomy; PLATE (374): anatomy of three species of *Vaginula*; SIMROTH (422).
- Vaginula djiloloensis*, Halmahera, p. 140, *borneensis*, Borneo, p. 142; SIMROTH, Abh. Senckenb. Ges. xxiv, figg.: n. spp.
- Veronicella*, notes on two species of; COCKERELL (82).

## BASOMMATOPHORA.

## AURICULIDÆ, LIMNÆIDÆ, PHYSIDÆ, and CHILINIDÆ.

- Ancylus uncinatus*, Argentine Republic; ANCEY, Boll. Mus. Torino, xii, p. 21: *A. libanicus*, Syria; NÆGELE, Nachrbl. Deutsch. malak. Ges. 1897, p. 13: *A. stuhlmanni*, Victoria Nyanza; MARTENS (282), p. 151, fig.: *A. javanus*, Java; MARTENS (281), p. 15, fig.: *A. rushii*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 298, fig.: n. spp.
- Auriculacea*, monograph commenced by KOBELT (3 pls. only) in MARTINI & CHEMNITZ (288).
- Auricula socotrensia*, Socotra; SMITH, J. Malac. vi, p. 37, fig.: n. sp.
- Carychium sibiricum*, Siberia; WESTERLUND, Ann. Mus. St. Petersburg. 1897, p. 124: *C. stygium*, Mammoth Cave, Kentucky; CALL, Amer. Natural. xxxi, p. 387, fig.: *C. javanum*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 90: n. spp.
- Cassidula triparietalis*, Ceram, Batchian, and Flores; MARTENS (281), p. 145, fig.: n. sp.
- Isidora rollei*, Jaffa; KOBELT in Rossmässler's Icon. Neue Folge, Suppl.-Bd. i, p. 60, fig.: *I. strigosa*, *transversalis*, Victoria Nyanza; MARTENS (282), p. 139, figg.: *I. sumatrana*, Sumatra, *ovalina*, *minahassa*, Celebes, p. 8, *timorensis*, Timor, p. 9, *stagnalis*, Sumatra, p. 10; MARTENS (281), figg.: n. spp.
- Limnaea brevispira*, Sumatra; MARTENS (281), p. 2, fig.: *L. (Fossaria) arctica*, Siberia; WESTERLUND, Ann. Mus. St. Petersburg. 1897, p. 141: *L. humerosa*, Uganda, *undussumae*, Undussumae; MARTENS (282), p. 135, figg.: n. spp.
- Melampus hypoleucus*, Zanzibar; MARTENS (282), p. 263, fig.: n. sp.
- Pedipes dohrni*, Cameroons; AILLY (4), p. 118: n. sp.
- Physopsis tanganyica*, Tanganyika; MARTENS (282), p. 144, fig.: n. sp.
- Planorbis sumatrana*, *proclivis*, Sumatra; MARTENS (281), p. 12, figg.: *P. apertus*, Lake Albert Edward; MARTENS (282), p. 149, fig.: *P. (Spirodiscus) caucasicus*, p. 125, Caucasus, (*Gyrulus*) *rapidus*, Siberia, (*G.*) *foveolatus*, Russia, p. 126, (*G.*) *lentus*, (*G.*) *kamischaticus*, (*Armiger*) *baicalensis*, p. 127, (*G.*) *centrifugus*, p. 141, *G. planoconus*, *G. granulatus*, p. 142, Siberia; WESTERLUND, Ann. Mus. St. Petersburg. 1897: *P. (Segmentina) planodiscus*, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 638, fig.: n. spp.
- Plecotrema sykesii*, Karachi; MELVILL, P. Malac. Soc. London. ii, p. 292, fig.: n. sp.
- Protancylus*, n. g., p. 280, for *P. adhaerens*, p. 281, and *pileolus*, p. 282, Celebes; SARASIN, Zool. Anz. xx, figg.: n. spp.
- Pythia scarabeus*, its anatomy; PLATE (374).
- MIRATESTIDÆ, n. fam. for *Miratesta* (n. g.) *celebensis*, n. sp., Celebes; SARASIN, Zool. Anz. xx, pp. 242-245, figg.

## OPISTHOBRANCHIATA.

## NUDIBRANCHIATA.

*Nudibranchiata*: collection from Ternate, with notes on classification and anatomy of several species; BERGH (30): Seventeen species found at Tromsø; KRAUSE (253).

*Doris imperialis*, W. Australia; KENT (238), p. 150, fig. : n. sp.

*Phyllobranchus borgnini*, with anatomy, Gulf of Naples; TRINCHESE, Mem. Acc. Bologna, v, p. 145, fig. : n. sp.

## TECTIBRANCHIATA.

*Aceras africana* (P. Fisch. MS.), Senegal, p. 62, *fischeri*, Spain, p. 65; LOCARD (259), figg. : n. spp.

*Acteon azoricus*, Azores; LOCARD (259), p. 85, fig. : n. sp.

*Amphisphyræ flava*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 234, fig. : n. sp.

*Aplysiidae*, abstract account of anatomy; TRINCHESE, Atti Acc. Pontan. xxv, p. 1.

*Berthella brocki*, Amboina, p. 120, *edwardsii*, Azores, p. 122; VAYSSIÈRE, J. Conchyl. xlv, figg. : n. spp.

*Bouvieria*, n. subgen. of *Pleurobranchus*, for *P. scutatus*, Martens; VAYSSIÈRE, J. Conchyl. xlv, p. 116.

*Bulla*, notes on the genus, with *B. secunda*, Japan, p. 112, *dubiosa*, loc. incert., p. 113, *subaustralis*, Tahiti and Philippines, p. 114, *delorti*, Japan, 116; MABILLE, Bull. Soc. Philom. viii: *B. mabilleyi*, Cape Verd Is., p. 50, *insperata* (P. Fisch. MS), N. W. Africa, p. 54, *simplex*, N. W. Africa, p. 55; LOCARD (259) figg. : n. spp.

*Bullina oblonga*, S. Africa; SOWERBY (433), p. 20, fig. : n. sp.

*Cylichna spreta*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 234, fig. : n. sp.

*Doridium alboventrale*, Ternate; BERGH, Abh. Senckenb. Ges. xxiv, p. 119, fig.: *D. (?) laurentianum*, p. 237, *maderense*, p. 238, Madeira; WATSON, J. Linn. Soc. xxvi, n. spp.

*Huminea gracilis*, p. 20, fig., *subcylindrica*, p. 29, S. Africa; SOWERBY (433): n. spp.

*Leucotina jaskensis*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 21, fig. : n. sp.

*Oscaniella*, n. g., p. 94, for *O. purpurea*, p. 95, *O. affinis*, p. 105, Philippines, *O. styphla*, p. 107, Amboina, & *O. diversicolor*, p. 103, Moluccas; BERGH in Semper's Reisen im Arch. Phil. vol. vii, figg. : n. spp.

*Oscaniopsis*, n. g., p. 53 for *O. semperi*, p. 54, Philippines & *O. compta*, p. 58, Hong Kong; BERGH in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, figg. : n. spp.

*Oscanius semperi*, Philippines; VAYSSIÈRE, J. Conchyl. xlv, p. 134, fig.: *O. petersi*, p. 89, Mozambique, *semonis*, p. 91, Amboina; BERGH, in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, p. 89, figg. : n. spp.

*Philine milne-edwardsi*, Cape Verd Is.; LOCARD (259), p. 35, fig.: *P. complanata*, p. 235, *trachyostraca*, *desmotis*, p. 236, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : n. spp.

*Pleurobranchæa brockii*, Indian Ocean, p. 41, *agassizi*, Bahamas, p. 48, *inconspicua*, Brazil, p. 49; BERGH in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, figg. : n. spp.

*Pleurobranchidae*; BERGH, in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, pp. 1-115.

- Pleurobranchus perrieri*, Pacific Ocean, p. 126, *möbii*, Island of Querimba, p. 128; VAYSSIÈRE, J. Conchyl. xlv, figg.: *P. crossei*, Antilles, p. 353, *giardi*, Philippines, p. 354; VAYSSIÈRE, t. c. figg.: *P. dautzenbergi*, p. 239, *lowei*, p. 240, Madeira; WATSON, J. Linn. Soc. xxvi, figg.: n. spp.
- †*Pseudavena*, n. sub-gen. of *Tornatina*, for *S. tauroglandula*, n. sp.; SACCO (403), Pt. xxii, p. 39.
- Ringicula pirulina*, Morocco, p. 87, *minutula*, 'Tropiques,' p. 89; LOCARD (259), figg.: n. spp.
- Tornatina mirabilis*, Portugal, p. 72, *pusillina*, Spain, p. 75; LOCARD (259), figg.: n. spp.
- Tylodinella trinchetti*, n. gen. and sp., Gulf of Naples; MAZZARELLI, Zool. Jahrb. Syst. vol. x, p. 600, figg.
- TYLODINIDÆ, n. fam., including the genera *Tylodina* and *Tylodinella*, with anatomy; MAZZARELLI, t. c. p. 596.

## PROSOBRANCHIATA.

### PECTINIBRANCHIATA.

#### HETEROPODA.

- Pterosoma*, history of, with confirmation of Heteropod nature; CROSSE, J. Conchyl. xlv, p. 207.

#### TOXOGLOSSA.

### TEREBRIDÆ, CONIDÆ, PLEUROTOMIDÆ, and CANCELLARIIDÆ.

- Aliceia*, n. g., type *A. ænigmatica*, n. sp., Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 182, fig.
- Bela abyssorum*, Spain and Azores, p. 246, *holomera*, Gulf of Gascony, p. 252, *furfuraculata*, Morocco, p. 254, *detegata*, p. 256, *graphica*, p. 257, Portugal, *minuscularia*, Cape Finistère, p. 259; LOCARD (259), figg.: n. spp.
- Belomitra fischeri*, Spain, p. 261, *spelta* (Monts. MS.), Spain and Canaries, p. 263, *lyrata* (Monts. MS.) Azores, p. 265; LOCARD (259), figg.: n. spp.
- Cancellaria souverbiei*, Crosse, is a synonym of *C. crenifera*; SMITH, P. Malac. Soc. ii, p. 231.
- Cithara semizonata*, p. 48, *subgibbosa*, *crystallina*, p. 49, *subglobosa*, *diaglyphæ*, p. 50, *eupæcila*, *subgracilis*, p. 52, *harpellina*, p. 53, *capillata*, *lepidella*, p. 54, *raffini*, p. 55; HERVIER, J. Conchyl. xlv: n. spp.
- Clathurella verrucosa*, S. Africa; SOWERBY (433), p. 3, fig.: *C. rugosissima*, Canaries, p. 237, *salarium* (P. Fisch. MS), Cape Verd Is., p. 238; LOCARD (259), figg.: *C. ephela*, *squarrosa*, p. 140, *phædra*, *spelsodea*, p. 141, *rufolirata*, p. 142, *euzonata*, p. 143, *subfelina*, p. 144, *iospira*, p. 145, *edychroa*, p. 146, *idiomorpha*, *perangulata*, p. 147, *subcylindrica*, p. 148, Lifu; HERVIER, J. Conchyl. xlv, figg.: n. spp.
- Clionella delicatulina*, Morocco and Azores, p. 222, *conspicienda*, Azores, p. 225; LOCARD (259), figg.: n. spp.
- Cythara victoriana*, Vancouver Island; DALL (110), p. 13, fig.: n. sp.
- Daphnella galactosticta*, *lifouana*, p. 150, Lifu; HERVIER, J. Conchyl. xlv, figg.: *D. cymatodes*, p. 47, *atractoides*, p. 48; HERVIER, J. Conchyl. xlv: n. spp.
- Drillia cygnea*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii, p. 379, fig.: n. sp.

- Mangilia nanisca*, p. 55, *dealbata*, p. 56, *colombi*, p. 57, *isodoma*, *isophanes*, p. 58, *diatula*, p. 59; HERVIER, J. Conchyl. xlv: *M. bulbulina*, Portugal; LOCARD (259), p. 235, figg. : n. spp.
- Pleurotoma bureaui*, p. 149, *chevreuxi*, p. 150, *anceyi*, p. 151, *dalmasi*, p. 153, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. [Also (117), pp. 37-39]: *P. (Drillia) layardi*, p. 3, *burnupi*, p. 4, S. Africa; SOWERBY (433), figg.: *P. milne-edwardsi*, Morocco and Azores, p. 156, *fischeri*, Morocco, p. 158, *talismani*, Morocco and Azores, p. 160, *erraneum*, Morocco, p. 163, *scitulinum*, Azores, p. 165, *peregrinum*, Spain and Portugal, *devestitum*, N. W. Africa, p. 169, *neotericum*, N. W. Africa and Marseilles, p. 172, *circumcinctum*, Morocco, p. 174, *denudatum*, Morocco and Azores, p. 176, *nezuosolum*, p. 178, *vacantivum*, p. 180, Azores, *decoloratum*, p. 183, *imum*, p. 185, Morocco, *leptoconchum*, (P. Fisch. MS.), p. 191, *tenellunum*, p. 193, *urinator*, p. 195, Azores, *projecticum*, Morocco, p. 197, *mericiacium*, N. W. Africa, p. 199, *turrisulcatum*, Azores, p. 205, *monterosatoi*, Morocco, p. 209; LOCARD (259), figg.: *P. (Drillia) booleyi*, *P. (D.) ochroleuca*, p. 165, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, figg. : n. spp.
- Pleurotomella atlantica*, Spain and Morocco, p. 240, *demulcata*, Portugal and Morocco, p. 243; LOCARD (259), figg. : n. spp.
- Raphitoma peregrinator*, Spain; LOCARD (259), p. 229, fig. : n. sp.
- Surcula tenerima* (P. Fisch. MS.) Azores; LOCARD (259), p. 216, fig. : n. sp.
- † *Teleocheilus*, n. gen., type *Daphnella gracillima*, Ten.-Woods; HARRIS (184), p. 64.
- Terebra severa*, p. 9, (*Euryta*) *thyraea*, p. 10, Mekran Coast; MELVILL, Mem. Manchester Soc. xiii, No. 7, figg. : n. spp.
- Thesbia nudator*, Azores, p. 218, *folini*, Morocco, p. 220; LOCARD (259), figg. : n. spp.

## RACHIGLOSSA.

## OLIVIDÆ, HARPIDÆ, MARGINELLIDÆ, VOLUTIDÆ, and MITRIDÆ.

- Ancilla decipiens*, *optima*, S. Africa; SOWERBY (433), p. 7, figg.: *A. booleyi*, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, p. 166, fig. : n. spp.
- Ancillaria hilgendorfi*, Japan; MARTENS, Archiv Naturg. lxiii, p. 167, fig. : n. sp.
- Gibberula retusa* (Monts. MS.), Spain and Morocco, p. 128, *abyssicola* (Monts. MS.), Spain, p. 130, *monterosatoi*, Cape Finistère, p. 131; LOCARD (259), figg. : n. spp.
- Marginella jousseaumei*, p. 111, *marocana*, p. 114, Morocco and Canary Is., *crustata*, 'Tropiques,' p. 116, *parvula*, N. W. Africa, p. 117, *quadripunctata*, p. 119, *cernita*, p. 120, Cape Verde Is.; LOCARD (259), figg.: *M. burnupi*, *ponsonbyi*, S. Africa; SOWERBY (433), p. 10, figg.: *M. (Gibberula) charbarensis*, (*Cryptospira*) *shoplandi*, p. 8, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, figg. : n. spp.
- Mitra (Imbricaria) isomeres*, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, p. 107, fig.: *M. exilima*, N. W. Africa; LOCARD (259), p. 152, fig.: *M. amaura*, *rufobalteata*, p. 60, *pagodula*, p. 61, *humilis*, *diabesa*, p. 62, *ochracea*, *alboteniata*, p. 63, *lanceolata*, *aubryana*, p. 64, *loyaltiensi*, p. 65, *rhodochroa*, *roseotincta*, p. 66, *goubini*, p. 67, *diutenera*, *verecundula*, p. 68; HERVIER, J. Conchyl. xlv: *M. (Costellaria) stephaneuca*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 6, fig.: *M. semigranosa*, W. coast of S. America; MARTENS, Archiv Naturg. lxiii, p. 178 : n. spp.

- Mitra obscura*, Hutton, Note on; SUTER, P. Malac. Soc. London, ii, p. 201:  
*M. crouani*, Crosse, is a synonym of *M. conica*; SMITH, P. Malac. Soc.  
 ii, p. 231.
- Oliva dolicha*, Cape Verde Is.; LOCARD (259), p. 107, fig. : n. sp.
- Olivella williamsi*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii,  
 p. 380, fig. : n. sp.
- Omogymna*, n. sect. of *Oliva*, type *O. paxillus*, Reeve; MARTENS, Archiv  
 Naturg. lxiii, p. 157.
- Persicula saharica*, p. 122, *lucens*, p. 123, N. W. Africa, *bulbulina*, N. W.  
 Africa, p. 125; LOCARD (259), figg. : n. spp.
- + *Pterospira*, n. subgen. of *Voluta*, type *V. hannaforði*, M'Coy; HARRIS  
 (184), p. 100.
- Ternivoluta*, n. subgen. of *Voluta*, type *V. studeri*, n. sp., East Australia;  
 MARTENS, Archiv Naturg. lxiii, p. 177.
- Voluta funiformis*, note on; BEDDOME, P. Soc. Tasmania, 1896, p. 86.
- Voluta hilgendorfi*, Japan; MARTENS, Archiv Naturg. lxiii, p. 176, fig. :  
 n. sp.
- Volutella parvulina*, Spain, p. 126, *minusculina*, Morocco, p. 127; LOCARD,  
 (259), figg. : n. spp.

# FASCIOLARIIDÆ, TURBINELLIDÆ, BUCCINIDÆ, NASSIDÆ, COLUM- BELLIDÆ, and MURICIDÆ

- Bullia uruguayensis*, Uruguay; PILSBRY, Nautilus, xi, p. 6: *B. similis*,  
 S. Africa; SOWERBY (433), p. 5, fig. : n. spp.
- Columbella nitidulina*, Morocco and Azores; LOCARD (259), p. 143, fig. :  
*C. langleyi*, p. 10, *consanguinea*, p. 11, S. Africa; SOWERBY (433), fig. :  
*C. brasiliiana*, Brazil and Uruguay, *japonica*, Japan; MARTENS, Archiv  
 Naturg. lxiii, p. 170, fig. : *C. (Mitrella) cartwrighti*, Persian Gulf;  
 MELVILL, Mem. Manchester Soc. xli, No. 7, p. 8, fig. : n. spp.
- Columbella stepheni*, n. n. = *C. pacesi*, M. & S. non Smith; MELVILL &  
 STANDEN, J. Conch. viii, p. 407.
- Columbellidæ*, monograph completed by KOBELT in MARTINI & CHEMNITZ  
 (288).
- Coralliophila persica*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli,  
 No. 7, p. 6, fig. : n. sp.
- Euthria saharica*, N. W. Africa; LOCARD (259), p. 326, fig. : n. spp.
- Fulgur africanus*, S. Africa; SOWERBY (433), p. 1, fig. : n. sp.
- + *Fusimorio*, n. gen., for *Fusus calcarensis*, Micht.; SACCO (403), Pt. xxii,  
 p. 25.
- Fusus sectus*, N. W. Africa; LOCARD (259), p. 331, fig. : n. sp.
- Latirolagena*, nom. nov., for *Lagena*, Schum. nom. præocc.; HARRIS (184),  
 p. 150.
- Latiromitra specialis*, n. gen. et spec., Morocco; LOCARD (259), p. 321, fig.
- + *Loxotaphrus*, n. subgen. of *Phos*, type *P. variciferus*, Tate; HARRIS (184),  
 p. 165.
- Meyeria decorata*, Azores; LOCARD (259), p. 337, fig. : n. sp.
- Murex (Ocinebra) medicago*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 242,  
 fig. : *M. bojadorensis*, p. 304, *saharicus*, p. 305, *leucas* (P. Fisch. m.),  
 p. 306, N. W. Africa; LOCARD (259), figg. : n. spp.
- Murex huttoni*, Wright, and *M.ournieri*, Crosse, are respectively syno-  
 nyms of *M. penchinati*, Crosse, and *M. emarginatus*, Sby.; SMITH, P.  
 Malac. Soc. ii, p. 230.
- Muricidæ*, critical notes on many genera and species; BAKER, Tr. Ac.  
 St. Louis, vii, p. 371.
- Nassa camelus*, New Britain; MARTENS, Archiv Naturg. lxiii, p. 173, fig. :  
*N. (Niotha) eucomista*, Andaman Islands; MELVILL & SYKES, P.

- Malac. Soc. London, ii, p. 169, fig. : *N. producta*, S. Africa; SOWERBY (433), p. 6, fig. : *N. antiquata*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 241, fig. : *N. (Niotha) mammillifera*, Persian Gulf, (*Hima*) *townsendi*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 4, figg. : n. spp.
- Neptunea aquitanica*, Spain, p. 354, *torra*, Spain and Morocco, p. 361, *pupoidea*, p. 363, *ecaudis*, p. 368, *peregra*, p. 371, Spain; LOCARD (259), figg. : *N. sachsenheimi*, Spitzbergen; KIMAKOWICZ, Verh. Siebenb. Ver. xlv, p. 75 : n. spp.
- Ocenebra cala*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 296, fig. : n. sp.
- +*Pholidotoma*, n. gen., for *Fusus subheptagonus*, D'Orb.; COSSMANN, C.R. Ass. France, 1896, p. 249.
- Pseudomurex monterosatoi*, Spain; LOCARD (259), p. 315, fig. : n. sp.
- Purpura lapillus*, note on variation and habits of; WENTWORTH, Nautilus, xi, p. 57.
- Sistrum rawsoni*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 5, fig. : n. sp.
- Taranis monterosatoi*, Spain; LOCARD (259), p. 376, fig. : n. sp.
- Trophon decoratus*, Azores, p. 340, *cossmanni*, N. W. Africa, p. 312, *deversus*, Azores, p. 313; LOCARD (259), figg. : *T. lowei*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 244, fig. : n. spp.
- Urosalpinx rushii*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 297, fig. : n. sp.

### LOTORIIDÆ, CASSIDIDÆ, CYPRÆIDÆ, and STROMBIDÆ.

- Cassis crossei*, Philippines; HIDALGO, J. Conchyl. xlv, p. 217 : n. sp.
- Cypræa lynx*, deformed by disease; FORD, P. Ac. Philad. 1897, p. 328. : *C. achatidea*, Gray, varieties of; CROSSE, J. Conchyl. xlv, p. 218.
- Cypræa kaiserii, wilhelmina*, West Australia; KENYON, P. Linn. Soc. N. S. Wales, xxii, p. 145 : n. spp.
- Lotorium armatum*, Marquesas Islands (?); SOWERBY, P. Malac. Soc. London, ii, p. 137, fig. : n. sp.
- Pedicularia decurvata*, Azores; LOCARD (259), p. 96, fig. : n. sp.
- Tylospira*, n. gen., type *Buccinum scutulatum*, Martyn; HARRIS (184), p. 222.

### CERITHIIDÆ, NERINEIDÆ, TURRITELLIDÆ, and CÆCIDÆ.

- Bittium depauperatum*, p. 245, *incile*, p. 246, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : *B. (?) eburneum*, N. W. Africa; LOCARD (259), p. 388, fig. : n. spp.
- Cæcum atlantis*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 248, fig. : n. sp.
- Cerithiella macrocephala*, Azores; DAUTZENBERG & FISCHER (117), p. 39 : & (118), p. 158, fig. : n. sp.
- Cerithiopsis lirata, exquisita*, S. Africa; SOWERBY (433), p. 14, figg. : *C. excavata*, Marseilles; LOCARD (259), p. 383, fig. : n. spp.
- Mathildia terebellata*, Azores; DAUTZENBERG & BOURY, Mem. Soc. zool. France, x, p. 73, figg. & (114), p. 33 : n. sp.
- Mesulia flammifera*, N. W. Africa; LOCARD (259), p. 396, fig. : n. sp.
- Serratocerithium*, new section of *Cerithium*, type *C. serratum*, Bruguière; VIGNAL, Feuille Natural. 1897, p. 183.
- Turritella*, monograph by KOBELT in MARTINI & CHEMNITZ (288).
- Turritella fultoni*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 14, fig. : *T. leptomita*, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, p. 171, fig. : n. spp.
- Turritella oxyacris*, n. n. for *T. acuta*, Ten.-Woods non Mayer; TATE, Tr. R. Soc. S. Austral. xx, p. 41 : *T. monilis*, n. n. for *T. monilifera*, Ad. & Rve. præocc.; KOBELT in MARTINI & CHEMNITZ (288), p. 13.

## MELANIIDÆ, LITTORINIDÆ, and SOLARIIDÆ.

- † *Hisingeria*, n. g. for *Inachus planorbis*, Hisinger, from the Upper Silurian, I. of Gotland; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. ii, p. 1028.
- Lacuna cossmanni*, N. W. Africa; LOCARD (259), p. 493, fig. : n. sp.
- Littorina biangulata*, Sumatra; MARTENS (281), p. 209, fig. : n. sp.
- Melania pergracilis*, p. 199, *arcuatula*, p. 201, Nyassa; MARTENS (282), figg. : *M. strigata*, p. 11, Java, *palembangensis*, p. 12, Sumatra; STRUBELL, Nachrbl. Deutsch. malak. Ges. 1897 : *M. curvicausta*, p. 36, *papillosa*, p. 38, *stricticausta*, p. 39, *bisinuata*, p. 43, Sumatra, *robusta*, p. 52, *buginensis*, p. 53, *uncta*, Celebes, *wichmanni*, p. 54, Timor, *adonara*, Adonara, p. 59, *pulchella*, p. 61, *dissimulans*, p. 73, *pinguicula*, p. 74, Sumatra; MARTENS (281), figg. : *M. yokohamensis*, Yokohama; HARTMAN, Nautilus, xi, p. 41 : *M. toradjourum*, p. 309, *patriarchalis*, p. 310, *palicolarum*, p. 312, *gemmifera*, p. 313, *zea-mais*, p. 314, *insulæ-sacræ*, *scaliariopsis*, p. 315, *molesta*, p. 316, Celebes; SARASIN, Zool. Anz. xx, figg. : n. spp.
- Nassopsidia*, n. sect. of *Paramelania*, for *P. milne-edwardsiana* and others; MARTENS (282), p. 208.
- † *Nummoculcar*, n. subgen. of *Solarium*, for *N. pustulosus*, n. sp., Cretaceous; COSSMANN, C.R. Ass. France, 1896, p. 259.
- † *Ophiletitina*, n. g., type *O. sublaxa*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. ii, pp. 1028 & 1029.
- † *Robicia*, n. gen. of *Melaniidæ*; BRUSINA (62), p. 17.
- † *Stuja*, n. gen. of *Melaniidæ*; BRUSINA (62), p. 20.
- † *Taniodomus*, n. g., for *T. gracilis* & *T. crassa*, n. spp.; KRAUSE, Samml. geol. Mus. Leiden, v, p. 213, figg.
- Tectarium turbinoides*, Cape Verd Is.; LOCARD (259), p. 490, fig. : n. sp.
- Tylomelania*, n. g., p. 317, for *T. neritiformis*, *carbo*, p. 318, *porcellanica*, p. 319, Celebes; SARASIN, Zool. Anz. xx, figg. : n. spp.
- Typhobia horei*, drawing of living specimen; MOORE, Nature, lvi, p. 199.
- † *Vrasia*, n. gen. of *Melaniidæ*, BRUSINA (62), p. 17.

## RISSOIIDÆ, HYDROBIIDÆ, VALVATIDÆ, ASSIMINEIDÆ, and PALUDINIDÆ.

- Amphirissoa*, n. g., for *A. cyclostomoides*, n. sp., Azores; DAUTZENBERG & FISCHER (117), p. 40 & (118), p. 161.
- Assiminea tythia*, Pietermaritzburg; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 639, fig. : *A. variegata*, Celebes; MARTENS (281), p. 314, fig. : n. spp.
- Assiminopsis abyssorum*, n. gen. et spec., Portugal; LOCARD (259), p. 466, fig. [also in Echange, xiii, p. 46].
- Baicalia (Maaikia) nodosa*, Siberia; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 128 : n. sp.
- Bythinia (Elona?) costulata*, Russia, p. 142, (*Digyreidum persica*, Persia, p. 143; WESTERLUND, Ann. Mus. St. Petersb. 1897 : *B. (Gabbia) neumanni*, Masai Land, *puteana*, Zanzibar; MARTENS (282), p. 191, figg. : n. spp.
- Lanistes stuhlmanni*, Dar-es-Salaam; MARTENS (282), p. 171, fig. : n. sp.
- Pachydrosia lacustris*, Sumatra; MARTENS (281), p. 26, fig. : n. sp.
- Rissoa (Cingula) caffra*, S. Africa; SOWERBY (433), p. 17, fig. : *R. (Cingula) innominata*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 309 : n. spp.
- Rissoina newcombei*, British Columbia; DALL (110), p. 14, fig. : n. sp.
- Stenothyra moussoni*, Java and Celebes; MARTENS (281), p. 210, fig. : n. sp.



- Tatea* belongs to *Amnicolidae*, not *Rissoininae*, and contains three species (one, *T. paradisiaca*, New South Wales, p. 362, being new); PILSBRY, P. Ac. Philad. 1897, p. 360.
- Valvata (Cincinna) brandti*, Transcaucasia, p. 129, (*C. confusa*, p. 130, Siberia; WESTERLUND, Ann. Mus. St. Petersburg, 1897 : n. spp.
- Vivipara grossicostata*, Sumatra; MARTENS (281), p. 25, fig.: *V. meta*, Victoria Nyanza; MARTENS (282), p. 179, fig.: *V. crassibucca*, p. 283, *lutulenta*, *persculpta*, p. 284, *rudipellis*, p. 285, Celebes; SARASIN, Zool. Anz. xx, figg. : n. spp.
- Viviparidae* of Japan; IWAKAWA, Zool. Mag. Tokio, ix, No. 99: see also *idem*, Annot. Zool. Jap. i, pp. 83-92.

## CYCLOPHORIDÆ and CYCLOSTOMATIDÆ.

- Catalogue of species, some genera which are not distinguished may be new; KOBELT & MOELLENDORFF (248).
- Adelomorpha canefriana, globosa*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 416, figg. : n. spp.
- Alycaeus (Orthalycaeus) crenilabris, reticulatus*, (*Chamalycaeus) fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 93 : n. spp.
- Arinia blanda*, Flores; SMITH, Ann. Nat. Hist. xix, p. 627 : *A. (Leucarinia) minahassae*, Minahassa; KOBELT, Abh. Senckenb. Ges. xxiv, p. 39, fig. : n. spp.
- Chamalycaeus*, n. subgen. of *Alycaeus*, first species *A. andamanica*, Bens.; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 148.
- Cyathopoma artatum, prestoni, turbinatum*, p. 236, Ceylon; SYKES, P. Malac. Soc. London, ii, figg. : n. spp.
- Cyclophoridae*, notes on sections of; GODWIN-AUSTEN (167).
- Cyclophorus resconesi*, Ecuador; JOUSSEAUME, Naturaliste, 1897, p. 250, fig.: *C. (Scabrina) basisulcatus*, Upper Burmah; MARTENS, Nachrbl. Deutsch. malak. Ges. 1897, p. 179: *C. intermedius*, Uganda; MARTENS (282), p. 8, fig. : n. spp.
- Cyclotus (Pseudocyclophorus) euryomphalus*, Halmahera; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27: also in Abh. Senckenb. Ges. xxiv, p. 32, fig. : n. sp.
- Cylindropalaina*, n. sect. of *Palaina*, for *P. chrysalis*; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 43.
- Diadema solutum*, Carolines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 169 : n. sp.
- Diancta graeffei* (Mouss. MS), *macrostoma* (Mouss. MS), Vitilevu; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 44 : n. spp.
- Dioryx cariniger*, Laos; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 41 : n. sp.
- Diplommatina florensiensis, chrysostoma*, Flores; SMITH, Ann. Nat. Hist. xix, p. 626 : *D. calcarata*, (*Pseudopalaina*) *sulcicollis*, p. 94, (*Sinica*) *cyclostoma, auricula*, p. 95, *tetragonostoma, perpusilla, planicollis*, p. 96, *javana*, p. 97, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: *D. papuana*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 418, fig.: *D. (Nidica) prestoni*, Ceylon; SYKES, P. Malac. Soc. London, ii, p. 237, fig.: *D. leptospira*, Philippines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 45 : n. spp.
- Diplommatina*, several species figured; GODWIN-AUSTEN (167).
- Ditropis fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 92 : n. sp.
- Ditropopsis*, n. gen. for *D. papuana*, n. sp., New Guinea; SMITH, Ann. Nat. Hist. xx, p. 416, fig.; *D. (?) fultoni*, SMITH, t. c. p. 417, fig. : n. sp.

- Hargravesia luzonica*, Philippines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 39 : n. sp.
- Lagocheilus reticulatum*, Celebes; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 34: *L. papuanus*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 415, fig.: *L. connexum*, p. 90, *humile*, *macromphalum*, p. 91, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
- Leptopoma fibulinum*, Philippines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 33: *L. küenthali*, Halmahera, p. 26, *sarasinorum*, Minahassa, p. 29; KOBELT, Abh. Senckenb. Ges. xxiv, figg.: *L. altum*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 90 : n. spp.
- Lithidion bentii*, Socotra; SMITH, J. Malac. vi, p. 38, fig. : n. sp.
- Macropalaina*, n. sect. of *Palaina*, for *P. pomatiaeformis*; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 43.
- Mascaria*, note on; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 169.
- Moulinisia semperi*, *dissimilis*, Philippines, *goldfussi*, Cameroons; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 40 : n. spp.
- Mychopoma exul*, (German New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 45 : n. sp.
- Natalia* [nom. praeocc.] n. subgen. of *Cyclophorus* for *C. wahlbergi*; GODWIN-AUSTEN (167), p. 22.
- Omphalotropis albolabris*, Mauritius, p. 164, *catenata*, Koror I., *coronata*, Carolines, p. 165, *mutica* (Semper MS), *strictipila*, Pelew, *varians*, New Hebrides, p. 166, (*Stenotropis*) *ducalis* (Bttg. MS), Duke of York I. *geometrica* (Mouss. MS) Moorea, p. 167, *tumidula*, *carolinarum*, Carolines, p. 168; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : *O. rotumana*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 522 : n. spp.
- Opisthoporus deflexus*, n. n. for *O. borealis*, Heude, non Mlldff.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 38.
- Otopoma*, review of; GODWIN-AUSTEN (167), p. 25.
- Palaina* (*Macropalaina*) *scalarina* (Mouss. MS), p. 43, *ziphidium*, p. 44, Carolines; *P. doliolum* (Mouss. MS), p. 41, *kubaryi*, *ovatula*, Carolines, p. 42; *P. gedeana*, *nubigena*, Java, p. 94; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
- Palaina dohertyi*, p. 418, *novoguineensis*, p. 419, New Guinea; SMITH, Ann. Nat. Hist. xx, figg. : n. spp.
- Platyrhaphe expansilabris*, Philippines, *schmackeri*, China; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 37 : n. spp.
- Pomatias*, note on genus; LOCARD, Echange, xiii, p. 66.
- Pomatias* [= *Hartmannia*, Newton] *braueri*, p. 90, *waldernari*, p. 94, Croatia; WAGNER, Anz. Ak. Wien, 1897 : n. spp.
- Pterocylus pseudocumingi* (Nev.), Travancore, *schmackeri*, Sytschuan; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 36: *P. moluccensis*, Halmahera; KOBELT, Abh. Senckenb. Ges. xxiv, p. 33, fig. : n. spp.
- Pupina*, note on, with *P. limitaneus*, Burmah, p. 40, *tongupensis*, Arakan Hills, p. 41; GODWIN-AUSTEN (167), figg. : n. spp.
- Pupina dohertyi*, Flores; SMITH, Ann. Nat. Hist. xix, p. 625: *P. compacta*, *verbeeki*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 92: *P. bidentata*, Queensland; BEDDOME, P. Linn. Soc. N. S. Wales, xxi, p. 814, fig.: *P. (Siphonostyla*, n. subgen.) *longituba*, Halmahera; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27; also in Abh. Senckenb. Ges. xxiv, p. 36, fig. : n. spp.
- Pupinella hollyi*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 419, fig. : n. sp.

- Pupisoma circumlitum*, Queensland; HEDLEY, Rec. Austral. Mus. iii, p. 44, fig. : n. sp.  
*Registoma floresianum*, Flores; SMITH, Ann. Nat. Hist. xix, p. 626 : n. sp.  
*Rhaphaulus kükenthali*, Borneo; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27 : also in Abh. Senckenb. Ges. xxiv, p. 37, fig. : n. sp.  
*Scabrina laotica*, Luang-Prabang, Laos; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 35 : n. sp.  
*Siphonostyla*, n. subgen. of *Pupina* for *P. longituba*, n. sp.; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27.  
*Tylotaechus*, n. subgen. of *Pupina*, first species *P. adamsi*; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 143.

## TRUNCATELLIDÆ.

- Taheitia anctostoma*, Philippines, p. 31, *tessellata* (Bttg.), Bismarck Archipelago, p. 32; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.  
*Truncatella gracilentia*, New Guinea; SMITH, P. Malac. Soc. London, ii, p. 289, fig. : n. sp.

## HIPPLYONIDÆ, XENOPHORIDÆ, LAMELLARIIDÆ, NATICIDÆ, SUBULITIDÆ, ADEORBIIDÆ, and OOCORYTHIDÆ.

- Adeorbis unisulcatus*, Ireland; CHASTER, J. Conch. viii, p. 373, fig. : *A. sigaretinus*, Queensland; PILSBRY, P. Ac. Philad. 1897, p. 363, fig. : n. spp.  
†*Amathinoides*, n. subgen. of *Capulus*, for *C. sulcosus*, Brocchi; SACCO (403), pt. xx, p. 41.  
†*Ampullospira*, nom. nov., for *Euspira*, Cossmann non Desor and Agassiz; HARRIS (184), p. 265.  
*Crepidula*, embryology of; CONKLIN (91).  
†*Cyrtospira*, n. g., types *C. tortilis*, n. sp. and *Subulites ventricosus* Hall; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1073.  
*Hipponyx australis*, Quoy, parasitic on *Cidaris*; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 10.  
*Laciniorbis*, n. g., type *Adeorbis fimbriatus*, Martens; MARTENS, Archiv Naturg. lxiii, p. 175, figg.  
*Natica strongyla*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 11, fig. : *N. prosistens*, Portugal, p. 473, *extenta*, Morocco and Azores, p. 476, *bullula*, N. W. Africa, p. 478, *olivella*, Spain and N. W. Africa, p. 479, *brassiculina*, N. W. Africa, p. 480, *amabilis*, Portugal, p. 482; LOCARD (259), figg. : *N. (Nacca) furva*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 248, fig. : *N. simplex*, S. Africa; SOWERBY (433), p. 12, fig. : n. spp.  
*Neverita pilula*, Spain; LOCARD (259), p. 484, fig. : n. sp.  
*Oncidiopsis aurantiaca* (P. Fisch. MS.), Gulf of Gascony; LOCARD (259), p. 485, fig. : n. sp.  
*Oocorys fischeri*, Morocco and Azores; LOCARD (259), p. 291, fig. : n. sp.  
*Sigaretus oldroydii*, California; DALL, Nautilus, xi, p. 85, n. sp.  
*Thyca pellucida*, loc. not stated but *quaere* Ternate, parasitic on *Linckia*; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 7, fig. : n. sp. : *Thyca crystallina*, Gould, parasitic on *Linckia*; KÜKENTHAL, tom. cit. p. 9.  
*Xenophora senegalensis* (P. Fisch. MS), Azores; LOCARD (259), p. 488, fig. : n. sp.

## PTENOGLOSSA.

## SCALARIIDÆ.

- Adis vitrea*, p. 254, *trilineata*, *tricarinata*, p. 255, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : n. spp.
- Cioniscus pellucidus*, S. Africa; SOWERBY (433), p. 13, fig. : n. sp.
- Scalaria rhips*, p. 250, *aspera*, p. 251, *fischeri*, p. 252, *smithii*, p. 253, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : *S. zeleborei*, p. 50, *novoseelandia*, p. 57, *reevei*, p. 63, New Zealand, *klunzingeri*, p. 49, *jickelii*, p. 57, Red Sea, *sowerbyi*, p. 63, Mauritius, *mexicana*, p. 69, Mexico; CLESSIN in MARTINI & CHEMNITZ (288), figg. : *S. problematica*, p. 62, *folini*, p. 65, *grimaldii*, p. 67, *richardi*, p. 68, *guerni*, p. 71, *vicina*, p. 72, Azores; DAUTZENBERG & BOURY, Mem. Soc. zool. France, x, figg., also (114) pp. 31-33 : *S. pachygyra*, (P. Fisch. MS), Cape Verd Is.; LOCARD (259), p. 401, fig. [also in Echange, xiii, p. 2] : *S. fimbriolata*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 11, fig. : *S. mirifica* (P. Fisch. MS), Morocco, p. 2, *polygyrella* (P. Fisch. MS), Azores, *dissoluta* (P. Fisch. MS), Portugal and Cape Verdes, p. 3; LOCARD, Echange, xiii : n. spp.
- Scalariidæ*, monograph completed by CLESSIN in MARTINI & CHEMNITZ (288).

## GYMNOGLOSSA.

## EULIMIDÆ AND PYRAMIDELLIDÆ.

- †*Allocosmia*, n. n. for *Heterocosmia*, Koken, nom. præocc.; COSSMANN, Rev. Paleozool. i, p. 143.
- Apicalia biformis*, S. Africa; SOWERBY (433), p. 28 : n. sp.
- Elusa brunneo-maculata*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 13, fig. : *E. gradatula*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii, p. 380, fig. : n. spp.
- Eulima epiphane*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 13, fig. : *E. costellata*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 165, fig. & (117), p. 41 : *E. fulva*, p. 256, *sordida*, p. 257, *badia*, *rhapsum*, p. 258, *trunca*, p. 259, *inconspicua*, p. 260, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : *E. simplex*, S. Africa; SOWERBY (433), p. 14, fig. : n. spp.
- Eulimella nana*, Morocco; LOCARD (259), p. 431, fig., n. sp.
- Mucronalia eburnea*, Desh., parasitic on *Acrocladia*; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 1, fig. : n. sp.
- Mumiola* (?) *tenuis*, Queen Charlotte Islands; DALL (110), p. 14, fig. : n. sp.
- Niso richardi*, *joubini*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 166, fig. & (117), p. 41 : n. spp.
- Odontostomia* (*Miralda*) *inflecta* (Cpr. MS.), Queen Charlotte Islands and California; DALL (110), p. 14, fig. : n. sp.
- Odontostomia vernicolor*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii, p. 379, fig. : *O. omphaloessa*, p. 261, *undata*, p. 262, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : n. spp.
- Parthenina atlantica*, Morocco and Spain; LOCARD (259), p. 444, fig. : n. sp.
- Pyramidella curtissima*, Portugal; LOCARD (259), p. 455, fig. : n. sp.
- Stylifer celebensis*, parasitic on *Choriaster*, Celebes; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 6, fig. : *S. abyssorum* (P. Fisch. MS.), Azores; LOCARD (259), p. 416, fig. : n. spp.
- Stylopsis marioni*, Marseilles; LOCARD (259), p. 432, fig. : n. sp.

- Syrnola karachiensis*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 12, fig. : n. sp.  
*Turbonilla dispar, uruguayensis*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 296, figg.: *T. pauperata*, Spain and N. W. Africa; LOCARD (259), p. 437, fig.: *T. corti*, p. 168, *gitaena*, p. 169, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg., also (117), pp. 41 & 42 : n. spp.

## SCUTIBRANCHIATA.

## HELICINIDÆ and HYDROCENIDÆ.

- Georissa javana, laeviuscula*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 97 : n. sp.  
*Helicina plicatula*, note on; PILSBRY, Nautilus, x, p. 118: *H. dysoni* is arboreal in habitat; SIMPSON, Nautilus, xi, p. 13.  
*Helicina (Sulfurina) halmaherica*, Halmahera; KOBELT, Abh. Senckenb. Ges. xxiv, p. 39, fig.: *H. rabei*, Pelew Is.; PILSBRY, Nautilus, xi, p. 34. [a synonym of *H. rufocallosa*; ANCEY, t. c. p. 87] : n. spp.  
*Schazicheila hidalgoana*, Mexico; DALL, Nautilus, xi, p. 61 : n. sp.

## NERITIDÆ, TURBINIDÆ, TROCHIDÆ, DELPHINULIDÆ and CYCLOSTREMATIDÆ.

- Basilissopsis*, n. g., type *B. watsoni*, n. sp., Azores; DAUTZENBERG & FISCHER (117), p. 40 & (118), p. 163, fig.  
*Calliostoma funiculare*, off Mekran Coast; MELVILL, Manchester Soc. xli, No. 7, p. 18, fig.: *C. layardi*, S. Africa; SOWERBY (433), p. 18, fig. : n. spp.  
*Choristella*, n. gen. for *C. leptalea*, p. 140, *brychia*, p. 141, N. America; BUSH, Tr. Connect. Ac. x, figg. : n. spp.  
*Circulus smithi*, n. n. for *C. tricarinatus*, Smith non Wood, *dalli*, n. sp. from N. America, fig.; BUSH, Tr. Connect. Ac. x, p. 126.  
*Cocculina leptoglypta*, p. 177, *conspersa*, p. 178, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. : n. spp.  
*Cyclostrema sykesi*, p. 173, *smithi*, *iheringi*, p. 174, *normani*, p. 175, *ponsonbyi*, p. 176; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. : n. spp. [Also in Bull. Soc. zool. France, xxii, pp. 42-44.]  
*Cyclostrematidæ*, review of species from Atlantic Coast of America, with new genera and species; BUSH, Tr. Connect. Ac. x, pp. 97-143.  
*Cyclostremella*, n. gen. for *C. humilis*, N. America; BUSH, Tr. Connect. Ac. x, p. 140, fig. : n. sp.  
*Ethalia carneolata*, Bass Island, p. 19, *minolina*, Persian Gulf, p. 20; MELVILL, Mem. Manchester Soc. xli, No. 7, figg. : n. spp.  
*Eucosmia lurida*, Queen Charlotte Islands; DALL (110), p. 15, fig.: n. sp.  
*Gibbula micans*, New Zealand; SUTER, P. Malac. Soc. London, ii, p. 279, fig.: *G. (Cantharidella) phædra*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 15, fig. : n. spp.  
+ *Gibbuloidella*, n. subgen. of *Forskalia*, for *Trochus divergens*, Bon.; SACCO (403), pt. xxi, p. 38.  
*Granigyra spinulosa*, N. America; BUSH, Tr. Connect. Ac. x, p. 135 : n. sp.  
*Halistylus circumstriatus*, Uruguay; PILSBRY, Nautilus, xi, p. 7 : n. sp.  
*Leptogyra*, n. gen. for *L. verrilli*, p. 136, *inconspicua*, *erubincta*, p. 137, N. America; BUSH, Tr. Connect. Ac. x, figg. : n. spp.  
*Lissospira*, n. gen. for *Cyclostrema proxima*, Tryon, p. 130, with *L. striata*, *conveza*, p. 132, N. America; BUSH, Tr. Connect. Ac. x, figg.: *L. (Ganesa) abyssicola*, *rarinota*, N. America; BUSH, t. c. p. 134 : n. spp.

- Lippistes rollei*, Japan; MARTENS, Archiv Naturg. lxiii, p. 174, figg. : n. sp.  
*Mölleria quadra*, British Columbia; DALL (110), p. 15, fig. : n. sp.  
*Möllerioopsis*, n. gen. for *M. abyssicola*, n. sp., N. America; BUSH, Tr. Connect. Ac. x, p. 137, fig.  
*Monilea astrolabensis*, p. 15, *climacota*, p. 16, Mekran Coast, *nedyma*, Persia, p. 17; MELVILL, Mem. Manchester Soc. xli, No. 7, figg. : n. spp.  
*Monodonta bourcierii*, is a synonym of *M. alveolata*, A. Adams; SMITH, P. Malac. Soc. ii, p. 231.  
*Monodontella*, n. subgen. of *Monodonta*, for *M. labio*, L.; SACCO (403), pt. xxi, p. 23.  
*Neritina confluenta*, Flores and Adonara; MARTENS (281), p. 81, fig. : n. sp.  
†*Ormastralium*, n. subgen. of *Astralium*, for *Turbo fimbriatus*, Bors.; SACCO (403), pt. xxi, p. 15.  
*Phorculellus*, n. n. for *Phorculus*, Montr. non Cossmann; SACCO (403), p. xxi, p. 35.  
†*Pseudonina*, n. subgen. of *Collonia*, for *P. bellardii*, Micht.; SACCO (403), pt. xxi, p. 9.  
*Pseudotorella minuscula*, N. America; BUSH, Tr. Connect. Ac. x, p. 118, fig. : n. sp.  
*Solariella splendens*, p. 18, fig., *sculpta*, p. 29, S. Africa; SOWERBY (433) : n. sp.  
*Strigosella*, n. subgen. of *Calliostoma*, for *Trochus strigosus*, Gmel.; SACCO (403), pt. xxi, p. 49.  
*Thalotia beluchistana*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 17, fig. : n. sp.  
*Tharsiella*, n. gen. for *T. romettensis*, Seguenza; BUSH, Tr. Connect. Ac. x, p. 113.  
†*Trochocerithium*, n. gen., for *Trochus turritus*, Bon.; SACCO (403), pt. xxii, p. 26.  
*Turbo ponsonbyi*, S. Africa; SOWERBY (433), p. 17, fig. : n. sp.  
*Turciacula normani*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 172, fig.; & (117), p. 42 : n. sp.  
*Vitrinella tryoni*, N. America; BUSH, Tr. Connect. Ac. x, p. 123, fig. : n. sp.

### PLEUROTOMARIIDÆ, BELLEROPHONTIDÆ, and FISSURELLIDÆ.

- †BELLEROPHONTACEA, n. sub-order, to include 23 genera which they divide into 5 families : *Cyrtolitidæ*, *Protowartheidæ*, *Bucaniidæ*, *Bellerophonidæ*, and *Carinaropsidæ*; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, p. 2, p. 844.  
†*Bucanopsis*, n. g., type *B. carinifera*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, pp. 853 & 922.  
†*Bucanospira*, n. g. for *B. expansa*, n. sp. from the Upper Silurian of Western Tennessee; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1044, figg.  
†*Clathrospira*, n. g., type *Pleurotomaria subconica*, Hall; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 954.  
†*Conradella*, n. g., type *C. obliqua*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 851 & 904.  
†*Cyrtolitina*, n. g., type *Cyrtolites lamellifer*, Lindström; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 847 & 866.  
†*Dyeria*, n. g. for *Cyrtolites costatus*, James; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1044, fig.  
†EOTOMACEA, n. sub-order for *Pleurotomariidæ*, *Trochidæ*, *Fissurellidæ* and allies; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 930.  
†*Eotomaria*, n. g., type *E. sublaevis* (Ulrich), n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 954.

- †*Euconia*, n. g., types *Pleurotomaria etna* and *P. ramsayi*, Billings; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 953.
- †*Euconospira*, n. g., types *Pleurotomaria turbiniformis*, Meek & Worthen, and *P. missouriensis*, Swallow; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 955.
- †*Euryalax*, n. n. for *Sagana*, Koken, nom. præocc.; COSSMANN, Rev. Paleozool. i, p. 140.
- †*Eymarella*, n. n. for *Echetus*, Koken, nom. præocc.; COSSMANN, Rev. Paleozool. i, p. 140.
- Fissurella townsendi*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 20, fig. : n. sp.
- †*Gyronema*, n. subgen. of *Trochonema* Salter, or n. g., type *T. (G.) pulchellum*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1046.
- †*Kokenia*, n. g., type *Bucanella esthona*, Koken; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 849.
- †*Liospira*, n. g., types *Pleurotomaria micula*, Hall, and *P. americana*, Billings; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 953.
- †*Maclurina*, n. g., type *Maclurea manitobensis*, Whiteaves; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 1041.
- †*Meekospira*, n. g., type *Eulina? peracuta*, Meek & Worthen; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1079.
- †*Megalomphala*, n. g., type *Bellerophon contortus*, Eichwald; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 850.
- †*Omospira*, n. g., type *O. laticincta*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, pp. 932 & 944.
- †*Owenella*, n. g., type *Bellerophon antiquatus*, Whitfield; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 847.
- †*Plethospira*, n. g., type *Holopea cassina*, Whitfield; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 958.
- Pleurotomaria beyrichii*, a living specimen described; MITSUKURI, Annot. Zool. Jap. i, p. 67: *P. quoyana*, anatomy of: BOUVIER & FISCHER (53).
- †*Polyleasma*, n. n., for *Euzone*, Koken, nom. præocc.: COSSMANN, Rev. Paleozool. i, p. 140.
- †*Protowarthia*, n. g., type *Bellerophon cancellatus*, Hall; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 848 & 867.
- †PROTOWARTHIDÆ, n. fam. for *Owenella*, n. g., *Protowarthia*, n. g., and *Bucanella*, Meek; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 847.
- Puncturella (Cranopsis) alicei*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 180, fig., and (117) p. 44 : n. sp.
- Raphistomina*, n. g., type *Raphistoma lapicida*, Salter; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 932 & 941.
- †RAPHISTOMIDÆ, n. fam. for *Raphistoma*, Hall, *Raphistomina*, n. g., *Euomphalopterus*, Roemer, *Omospira*, n. g., and *Scalites*, Emmons; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 930.
- Schismoche depressa*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 263, fig. : n. sp.
- †*Schizolopha*, n. g., type *S. textilis*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 952.
- Scutus*, anatomy of; BERGH (30).
- †*Seelya*, n. g., type *S. ventricosa*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 958.
- †*Solenospira*, n. g., type *Eunema pagoda*, Salter; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 959.
- †*Tetranota*, n. g., type *Bucania bidorsata*, Hall; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 849 & 875.

- †*Trepostira*, n. g., type *Pleurotomaria sphaerulata*, Conrad; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 957.  
 †TROCHONEMATIDÆ, n. fam.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 1043.  
 †*Turritoma*, n. g., type *Murchisonia acrea*, Billings; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 959.

## DOCOGLOSSA.

## ACMÆIDÆ and PATELLIDÆ.

- Acmaea englypta*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 181, fig. : n. sp.  
 †*Archinacella*, n. g., type *A. powersi*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 821 & 828.  
*Helcion pellucidum*, peripheral glandular organ; BOUTAN, Arch. Zool. exp., v, pp. 437-482, figg.  
 †*Helcionopsis*, n. g., type *H. fissicostata*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 821 & 826.

## III. SCAPHOPODA.

- Bathocyphus*, Pilsbry & Sharp, new sub-gen. of *Dentalium* for *D. ensiculus*; PILSBRY in TRYON (475) xvii, p. 121.  
*Cudulus hepburni*, p. 12, *tolmiei*, p. 13, Vancouver Island; DALL (110), figg.: *C. senegalensis*, Senegal, p. 3, *strangulatus*, Gulf of Gascony, *monterosatoi*, Cape Finistère, *artatus* (Jeff. MS), Gulf of Gascony, p. 4; LOCARD, Echange, xiii : n. spp.  
*Coccodentalium*, n. sub-gen. of *Dentalium*, for *D. radula*, Schröt.; SACCO (403), pt. xxii, p. 110.  
*Compressulens*, Pilsbry & Sharp, new sub-gen. of *Dentalium* for *D. pressum*, S. & P., n. n.; PILSBRY in TRYON (475) xvii, p. 123.  
*Dentaliidae*, monograph by PILSBRY in TRYON (475) xvii.  
*Dentalium semivestitum* (P. Fisch. MS), p. 9, *scannatum* (P. Fisch. MS), *exuberans*, *milne-edwardsi*, W. Africa, p. 10; LOCARD, Echange, xiii : *D. letsonce*, Sharp & Pilsbry, Philippines, p. 4, *neohexagonum*, S. & P., California, p. 19, *picteti*, Desh. MS, West Indies (!), p. 22, *agassizi*, S. & P., California, p. 26, *dipsycha*, S. & P., hab. unknown, p. 33, *fischeri*, Stearns, California, p. 36, *lodon*, P. & S., West Indies, p. 107, *aequatorium*, P. & S., Ecuador, p. 112, *watsoni*, S. & P., California, p. 113, *dalli*, P. & S., West Coast of America, p. 114, *innumerabile*, P. & S., Panama Bay, etc., p. 119, *longum*, S. & P., hab. unknown, p. 120, *brevicornu*, S. & P., Galapagos Islands, *simplex*, P. & S., Oregon, p. 125; PILSBRY in TRYON (475), xvii, figg.: *D. conspicuum*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 21, fig. : n. spp.  
*Dentalium cheverti*, S. & P., n. n., = *septemcostatum*, Brazier, non Abich, p. 9; *cookei*, S. & P., n. n., = *acus*, Cooke, non Eichwald, p. 29; *hungerfordi*, S. & P., n. n., = *compressum*, Sby., non auct., p. 84; *siculum*, Desh. MS, n. n., = *politum*, Costa, non L., p. 107; *pressum*, S. & P., n. n., = *compressum*, Watson, non D'Orb., p. 124; *stenoschizum*, P. & S., n. n., = *translucidum*, Sby., non Desh., p. 128; PILSBRY in TRYON (475) xvii.  
*Episiphon*, Pilsbry and Sharp, new sub-gen. of *Dentalium*, for *D. sowerbyi* and others; PILSBRY in TRYON (475) xvii, p. 117.  
*Gryptaome*, Pilsbry & Sharp, new sub-gen. of *Dentalium* for *D. sericatum* and others; PILSBRY in TRYON (475), xvii, p. 85.



*Rhabdus*, Pilsbry & Sharp, new sub-gen. of *Dentalium*, for *D. equatorium*, n. sp.; PILSBRY in TRYON (475) xvii, p. 112.  
*Siphonodentaliidae*, monograph commenced by PILSBRY in TRYON (475), xvii.

#### IV. PELECYPODA.

Development and morphology of shell in several families; BERNARD (38).  
 Pelecypods, gills in; RICE (390).  
 Classification; RICE (390).  
 Embryonal shell; BERNARD (35).  
 Terminology of shell; HYATT (216).  
 Species described from 'Investigator' Collections figured by ALCOCK & ANDERSON: Zool. Investigator, pls. i-iv.

#### SEPTIBRANCHIATA.

*Cuspidaria*, anatomy of; PLATE (375).  
*Cuspidaria simulans*, St. Vincent's Gulf, p. 44, *trigonalis*, Investigator Straits, p. 45; TATE, Tr. R. Soc. S. Austral. xx: *C. striolata*, Mediterranean and Atlantic coasts of France; LOCARD, Echange, xiii, p. 94: *C. maxima*, p. 222, *colpodes*, p. 223, *ledaeformis*, p. 224, *munieri*, p. 225, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. also (116), pp. 28 & 29: n. spp.  
*Poromya* (*Cetoconcha*) *isocardioides*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 230, fig. & (116), p. 30: n. sp.

#### EULAMELLIBRANCHIATA.

##### ANATINACEA.

*Chlamydoconcha orcutti*, Dall, anatomy; BERNARD, Ann. Sci. nat. iv, pp. 221-250, figg.  
*Pandora similis*, S. Africa; SOWERBY (433), p. 29: n. sp.  
 † *Saffordia*, n. g., type *S. ventralis*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 625.  
*Thracia rushii*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 292, fig.: *T. durouchouxi*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 229, fig. & (116), p. 30: n. spp.  
 † *Triplicosta*, n. subgen. of *Pholadomya*, for *P. progressiva*, n. sp., Cretaceous of California; COOPER, P. Calif. Ac. vi, p. 333.  
*Verticordia lamothei*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 227, fig. & (116), p. 30: n. sp.

##### PHOLADACEA.

*Teredo dallii*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 266, fig.: n. sp.

#### MYACEA and CARDIACEA.

† *Budmania*, n. subgen. of *Limnocardium*; BRUSINA (62), p. 34.  
*Cardium oblongum*, note on the siphonal papillæ; NAGEL (325).  
*Cardium burnupi*, S. Africa; SOWERBY (433), p. 25, fig.: *C. perrieri*, N. Atlantic; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 211, fig. & (116), p. 27: *C. mendanaense*, Marquesas Islands; SOWERBY, P. Malac. Soc. London, ii, p. 138, fig.: n. spp.

*Corbula coxi*, New South Wales; PILSBRY, P. Ac. Philad. 1897, p. 363, fig.: *C. lyoni*, p. 294, *theringiana*, p. 295, Uruguay; PILSBRY, P. Ac. Philad. 1897, figg.: n. spp.

### VENERACEA and TELLINACEA.

- † *Anodontophora*, n. gen. for *Anoplophora lettica*, Quenst.; COSSMANN, Rev. Paleozool. i, p. 51.
- Chione mekranica*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 21, fig.: n. sp.
- Cytherea (Tivela) transversa*, p. 23, *alucinans*, p. 24, S. Africa; SOWERBY (433), figg.: n. spp.
- Donax simplex*, S. Africa; SOWERBY (433), p. 23, fig.: *D. aperittus*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 24, fig.: n. spp.
- Dosinia globa* (A. Ad. MS.), Arabian Sea; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 22, fig.: n. sp.
- Eastonia rugosa*, recent and fossil; MELI, Bull. Soc. malac. Ital. xx, pp. 45-64.
- Mucoma inflatula*, Puget Sound, *liotricha*, Queen Charlotte Islands; DALL (110), p. 12, figg.: n. spp.
- Maetrella itheringi*, Bahia, Brazil; DALL, Nautilus, x, p. 123 : n. sp.
- Mesodema arechavalettoi* (Ithering MS), Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 293, fig.: n. sp.
- Psammobia denicketi*, Macassar, p. 243, *reevei*, Flores, p. 247; MARTENS (281), figg.: n. spp.
- Psammotellina pallens*, Bintang near Singapore, p. 235, *semmelinki*, Java and Borneo, p. 236; MARTENS (281), figg.: n. spp.
- Semele (Abra?) uruguayensis*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 293, fig.: n. sp.
- Tapes oncodes*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 23, fig.: n. sp.
- Tellina queketti*, S. Africa; SOWERBY (433), p. 22, fig.: *T. (Maera) methoria*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 23, fig.: n. spp.
- Venus (Anaitis) latilirata*, S. Africa; SOWERBY (433), p. 24, fig.: n. sp.

### SUBMYTILACEA.

- † *Actinomya*, n. g., type *Modiolopsis cincinnatiensis*, Hall & Whitfield; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 513.
- † *Allodema*, n. g., type *A. (Modiolopsis) subellipticum*, Ulrich; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 617.
- Anodonta bactriana*, Buchará; ROLLE, Nachrbl. Deutsch. malak. Ges. 1897, p. 172 : n. sp.
- † *Aristerella*, n. g. for *A. nitidula*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 524.
- Axinus dubius*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 215, fig. & (116), p. 27 : n. sp.
- † *Ceromyopsis*, n. g. for *Isocardia striata*; LORIO, Abh. Schweiz. pal. Ges. xxiv, No. 4, p. 79.
- Chlamydoconcha* classed with *Scioberetia* and *Ephippodonta*; BERNARD, Bull. Mus. Paris, iii, p. 65.
- † *Colpomya*, n. g., type *C. constricta*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 522.
- Condylocardia*, n. gen. for *C. pauliana*, M.-Chalmas MS, n. sp.; BERNARD, J. Conchyl. xlv, p. 174 [confer Zool. Rec., Moll., xxxiii, p. 57].

- Condylocardia pauliana*, M.-Chalmas MS, Island of Saint-Paul, *crassicaustata*, Stewart Island, p. 175, *australis*, M.-Chalmas MS, Island of Saint-Paul, *concentrica*, Stewart Island, p. 176; BERNARD, J. Conchyl. xlv, figg. : n. spp. [confer Zool. Rec., Moll., xxxiii, p. 57].
- Coralliophaga johnsoni*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 265, fig. : n. sp.
- Corbicula subplanata*, p. 112, *celebensis*, p. 113, Celebes, *trapezoidea*, p. 115, *angulifera*, p. 116, *lacustris*, p. 118, *gibba*, p. 121, Sumatra; MARTENS (281), figg. : n. spp.
- + *Cossmannella*, n. subgen. of *Cardita* for *C. ægyptiaca*; MAYER-EYMAR, J. Conchyl. xlv, p. 366, fig.
- Crassatella (Eriphyla) maldonadoensis*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 295 : n. sp.
- Cyrena moussoni*, Java, p. 94, *moluccensis*, Moluccas, p. 96; MARTENS (281), figg. : n. spp.
- Cyrenella rosea*, Cameroons; AILLY (4), p. 131, fig. : n. sp.
- + CYRTODONTIDÆ, n. fam., for *Cyrtodonta* and allies; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 533.
- Diplodonta berghi*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 216, fig. & (116), p. 28 : n. sp.
- Dreissensia holmi*, Cameroons; AILLY (4), p. 130, fig. : n. sp.
- + *Endodesma*, n. g., type *E. cuneatum*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 525.
- Lucina lacteola*, n. n. for *L. lactea*, Ad. non Lam. = *L. concentrica*, Ad. and Ang. non Lam.; TATE, Tr. R. Soc. S. Austral. xx, p. 48.
- Microcondylrea hageni*, *gracilis*, p. 8, *bicristata*, p. 9, Sumatra; STRUBELL; Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
- + *Modiolodon*, n. g., type *Modiolopsis oviformis*, Ulrich; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 521.
- + MODIOLOPSIDÆ, n. fam.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 500.
- Montacuta triangularis*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 264, fig. : n. sp.
- + *Palæopteria*, n. g., for *P. parvula*, n. sp.; WHITEAVES, Geol. Surv. Canada. Pal. Foss. iii, p. 181, figg.
- Pisidium sterkianum*, p. 291, *vile*, p. 292, Uruguay; PILSBRY, P. Ac. Philad. 1897, figg. : *P. sumatranum*, Sumatra; MARTENS (281), p. 121, fig. : *P. (Fossarina) dilatatum*, Siberia; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 131 : n. spp.
- + *Prolobella*, n. g., type *P. striatula*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 532.
- Pseudanodonta acutalis*, Sweden; DROUET, J. Conchyl. xlv, p. 134 : n. sp.
- + *Psiloconcha*, n. g., type *P. grandis*, Ulrich; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 530.
- + *Sabbara*, n. n., for *Rytia*, Stefanescu, nom. præocc.; COSSMANN, Rev. Palæozool. i, p. 156.
- + *Schafthutlia*, n. n., for *Gonodon*, Schaf. non Held; COSSMANN, Rev. Palæozool. i, p. 51.
- Scintilla compta*, *queketti*, *elongata*, *durbanensis*, S. Africa; SOWERBY (433), p. 26, figg. : n. spp.
- Spatha rotundata*, p. 242, Wembere Steppes, *trapezia*, p. 243, *divaricata*, Victoria Nyanza, *stuhlmanni*, p. 250, Albert Nyanza; MARTENS (282), figg. : n. spp.
- Sphærium stuhlmanni*, Victoria Nyanza; MARTENS (282), p. 261, fig. : n. sp.
- Unionidæ*, note on classification of; SIMPSON, Nautilus, xi, p. 18.
- Unio pinei*, p. 40, *buxtoni*, p. 55, *suttoni*, p. 56, Florida; WRIGHT, Nautilus, xi : *U. superiorenensis*, Lake Superior; MARSH, Nautilus, x, pp. 103, 121, fig. : *U. misoolensis*, Misool; SCHEPMAN, Notes Leyden Mus. xviii,

p. 259, fig.: *U. böhmi*, *gerrardi*, Tanganyika, *emini*, p. 224, Victoria Nyanza, *ambifarius*, p. 225, Dar-es-Salaam, *liederi*, p. 226, *hypsi-prymnus*, p. 230, Nyassa, *stuhlmanni*, p. 232, *ngesianus*, p. 234, Lake Albert-Edward, *multicolor*, p. 236, Victoria Nyanza, *rostralis*, p. 239, Tanganyika; MARTENS (282), figg.: *U. walkeri*, Florida; WRIGHT, Nautilus, xi, p. 91: *U. valens*, Savoy, p. 122, *multizonatus*, Denmark, p. 123, *nitidovirens*, Livonia, p. 130, *redactus*, Denmark, p. 131; DROUET, J. Conchyl. xlv: *U. hageni*, *palembangensis*, Sumatra; STRUBELL, Nachrbl. Deutsch. malak. Ges. 1897, p. 10: *U. schrencki*, p. 131, *abbreviatus*, p. 132, Siberia; WESTERLUND, Ann. Mus. St. Petersb. 1897: *U. verbecki* (Bttg. MS), Sumatra; MARTENS (281), p. 89, fig.: *U. pinkstonii*, Alabama, *kirklandianus*, p. 136, *burthianus*, p. 137, *lehmanii*, p. 138, Florida, *brimleyi*, p. 139, North Carolina; WRIGHT, Nautilus, x: *U. swordianus*, Virginia, p. 4, *diazensis*, Florida, p. 5; WRIGHT, Nautilus, xi: n. spp.

## PSEUDOLAMELLIBRANCHIATA.

- Amussiopecten*, n. subgen., of *Pectinidæ*; SACCO (403), pt. xxiv, p. 53.  
*Amussium sublucidum*, p. 193, *hypomeces*, p. 195, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. and (116) pp. 23 & 24 : n. spp.  
 †*Byassonychia*, n. g., type *Ambonychia radiata*, Hall; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 498.  
*Chlamys benedicti*, Verrill and Bush, West Indies, p. 74, *costellata*, V. and B., Newfoundland, p. 76; VERRILL, Tr. Connect. Ac. x: *C. alicei*, p. 188, *chaperi*, p. 190, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. and (116) pp. 22 & 23 : n. spp.  
 †*Cobracephalus*, n. g., for *C. angulosus*, n. sp.; WHIDBORNE, Devon. Fauna S. England, iii, pt. 2, p. 118.  
*Crassostrea*, n. subgen. of *Ostrea*, for *O. virginiana*, Gmel.; SACCO (403), pt. xxiii, p. 15.  
*Cubitoostrea*, n. subgen. of *Ostrea*, for *O. cubitus*, Desh.; SACCO (403), pt. xxiii, p. 12.  
*Cyclopecten*, n. gen. of *Pectinidæ*, type *C. pustulosus*, Verrill; VERRILL, Tr. Connect. Ac. x, p. 70.  
*Cyclopecten subimbrifer*, Verrill and Bush, n. n., for *Pecten hoskynsi*, Verrill non Forbes; VERRILL, Tr. Connect. Ac. x, p. 84.  
*Cyclopecten nanus*, Verrill and Bush, East Coast of U. S., p. 85, *simplex*, West Indies, p. 87; VERRILL, tom. cit. : n. spp.  
 †*Didymotis*, n. g., for *D. variabilis*, n. sp., from the Aptian of Columbia; GERHARDT, N. Jahrb. Min. Beil. Bd. xi, p. 178, fig.  
*Flabellipecten*, n. subgen. of *Pectinidæ*; SACCO (403), pt. xxiv, p. 55.  
*Flexopecten*, n. subgen. of *Pectinidæ*, for *P. flexuosus*; SACCO (403), pt. xxiv, p. 38.  
 †*Gigantostrea*, n. subgen. of *Ostrea*, for *O. gigantea*, Sol.; SACCO (403), pt. xxiii, p. 14.  
 †*Gryphæa incurva*, notes on; FRENCH (148).  
*Hyalopecten*, n. gen. of *Pectinidæ*, type *H. undatus*, Verrill; VERRILL, Tr. Connect. Ac. x, p. 71.  
*Hyalopecten dilectus*, Verrill and Bush, off Martha's Vineyard; VERRILL, Tr. Connect. Ac. x, p. 80 : n. sp.  
*Isomonis*, n. subg. of *Monia*, type *I. alberti*; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 184.  
*Leptopecten*, n. subgen. of *Chlamys*, type *C. monotimeris*, Conrad; VERRILL, Tr. Connect. Ac. x, p. 69.

- Lissopecten*, n. subgen. of *Chlamys*, type *C. hyalinus*, Poli; VERRILL, Tr. Connect. Ac. x, p. 68.
- †*Macrochlamys*, n. subgen. of *Pectinidæ*, [nom. præocc.]; SACCO (403), pt. xxiv, p. 32.
- Monia* (*Isomonina*) *alberti*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 185, fig. & (116) p. 22 : n. sp.
- Ostrea edulis*, note on the absorption of iron by; CARAZZI (70).
- Paramussium*, n. gen. of *Pectinidæ*, type *Amussium dalli*, Smith; VERRILL, Tr. Connect. Ac. x, p. 72.
- Parvamussium*, n. subgen. of *Pectinidæ*; SACCO (403), pt. xxiv, p. 48.
- Pecten thomasi*; SOWERBY, P. Malac. Soc. London, ii, p. 138, fig.: *P. palmeri*, California, p. 85, *randolphi*, State of Washington, *davidsoni*, Alaska, p. 86; DALL, Nautilus, xi : n. spp.
- Pectinella*, n. gen. of *Pectinidæ*, type *P. sigsbei*, Dall; VERRILL, Tr. Connect. Ac. x, p. 68.
- Pectinidæ*, revision of genera and subgenera of, with critical notes on several species; VERRILL, Tr. Connect. Ac. x, p. 41: *Pectinidæ*, classification of the; DOUVILLÉ (126).
- Philobrya filholi*, Stewart Island; BERNARD, J. Conchyl. xlv, p. 16, fig. : n. sp.
- PHILOBRYINÆ, n. subfam. of *Aviculidæ* for genus *Philobrya*; BERNARD, J. Conchyl. xlv, p. 8.
- Pinnidæ* of United States; DALL, Nautilus, xi, p. 25.
- Placopecten*, n. subgen. of *Chlamys*, type *C. clintonius*, Say; VERRILL, Tr. Connect. Ac. x, p. 69.
- Protamussium*, n. gen. of *Pectinidæ*, type *P. demissum*, Phil.; VERRILL, Tr. Connect. Ac. x, p. 71.
- †*Pseudoplacunopsis*, n. subgen. of *Plicatula* for *P. affixa*, n. sp.; BITTNER, Abh. geol. Reichsanst. xviii, p. 215.
- Variamussium*, n. subgen. of *Pectinidæ*; SACCO (403), pt. xxiv, p. 49.

## FILIBRANCHIATA.

- Arca* (*Barbatia*?) *carditæformis*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 200, fig. & (116), p. 25 : n. sp.
- Arcopecten recens*, Tasmania; TATE, P. Malac. Soc. London, ii, p. 182, fig. : n. sp.
- Basterotia tricostalis*, S. Africa; SOWERBY (433), p. 21, fig. : n. sp.
- †*Beurshausenia*, n. n. for *Macrodon*, Lycett non Müll.; COSSMANN, Rev. Paleozool. i, p. 93.
- Crenella columbiana*, Vancouver and Alaska, *leana*, p. 4, *japonica*, Japan, p. 5; DALL (110), figg. : n. spp.
- †*Digonimyia*, n. g., for *D. elegans*, n. sp.; WHIDBORNE, Devon. Fauna S. England, iii, pt. 2, p. 116.
- Hochstetteria trapezina*, Stewart Island; BERNARD, J. Conchyl. xlv, p. 18, fig. : n. sp.
- Modiola leucosticta*, Celebes; MARTENS (281), p. 86, fig. : *M. martensi*, Rio Grande do Sul; IHERING, Revist. Mus. Paulista, ii, p. 104, fig. : n. spp.
- Modiolaria taylori*, Vancouver, *seminuda*, Alaska; DALL (110), p. 5, figg. : n. spp.
- Myrina dalmasi*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 197, fig. & (116), p. 24 : n. sp.
- Pectunculus quicketti*, S. Africa; SOWERBY (433), p. 27, fig. : *P. maskatensis*, Arabian Sea; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 24, fig. : n. spp.
- †*Septiolaria*, n. subg. of *Modiola* for *M. pygmaea*, Müntz.; BITTNER, Abh. geol. Reichsanst. xviii, p. 45.

## PROTOBRANCHIATA.

- Diabolica diabolica*, no locality; JOUSSEAUME, Naturaliste, 1897, p. 265, n. g. and sp. [*Nuculidæ*].
- GLOMINÆ, n. subfam. of *Nuculidæ*, for genus *Glomus*; VERRILL & BUSH, Amer. J. Sci. iii, p. 53.
- Leda extenuata*, British Columbia; DALL (110), p. 8, fig.: *L. bernardi*, p. 206, *mabiliei*, *alluadi*, p. 207, *mirmidina*, p. 208, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, fig. & (116), pp. 25 & 26 : n. spp.
- Leda sulculata*, anatomy of; STEMPPELL (444).
- Ledella*, n. gen. of *Ledidæ*, with *L. parva*, n. sp., Atlantic coast of U. S. A.; VERRILL & BUSH, Amer. J. Sci. iii, p. 54.
- Ledidæ* and *Nuculidæ* of Atlantic coast, revision of; VERRILL & BUSH (486).
- Malletia faba*, Washington and British Columbia, *gibbsii*, British Columbia, p. 10, *pacifica*, Alaska and California, (*Tindaria*) *kennerlayi*, Washington, p. 11; DALL (110), figg.: *M. perrieri*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 209, fig. and (116) p. 27 : n. spp.
- Megayoldia*, n. gen. of *Ledidæ*, for *M. thraciæformis*; VERRILL & BUSH, Amer. J. Sci. iii, p. 55.
- Microyoldia*, n. gen. of *Ledidæ*, for *L. regularis*; VERRILL & BUSH, Amer. J. Sci. iii, p. 56.
- Neilonella subovata*, Cape Hatteras; VERRILL & BUSH, Amer. J. Sci. iii, p. 57 : n. sp.
- Nucula carlottensis*, Queen Charlotte Islands; DALL (110), p. 6, fig. : n. sp.
- Orthoyoldia*, n. gen. of *Ledidæ*, for *L. scapina*; VERRILL & BUSH, Amer. J. Sci. iii, p. 55.
- +*Rhetidia*, n. g. for *R. zittelii*, n. sp.; BITTNER, Abh. geol. Reichsanst. xviii, p. 222.
- Tindaria callistiformis*, E. coast of United States; VERRILL & BUSH, Amer. J. Sci. iii, p. 59 : n. sp.
- TINDARIIDÆ, n. subfam. of *Ledidæ*; VERRILL & BUSH, Amer. J. Sci. iii, p. 58.
- Tindariopsis*, n. gen. of *Ledidæ*, for *Malletia agathula*; VERRILL & BUSH, Amer. J. Sci. iii, p. 59.
- Yoldia limatula*, its anatomy; DREW (128).
- Yoldia ensifera*, British Columbia to California, *martyria*, Puget Sound and California; DALL (110), p. 9, figg.: *Y. tropica*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 25, fig. : n. spp.
- Yoldiella*, n. gen. of *Ledidæ*, for *L. lucida*; VERRILL & BUSH, Amer. J. Sci. iii, p. 55.
- Yoldiella inflata*, Cape Hatteras; VERRILL & BUSH, Amer. J. Sci. iii, p. 56 : n. sp.

## V. AMPHINEURA.

## APLACOPHORA.

- Proneomenia australis*, N. W. Australia; THIELE, Zool. Anz. xx, p. 399, n. sp.
- Notomenia*, n. g. for *N. clavigera*, n. sp., Torres Straits; THIELE, Zool. Anz. xx, p. 398.

## POLYPLACOPHORA.

Anatomy; PLATE, Zool. Jahrb. Suppl. iv, pp. 1-243, figg.

Morphology of the gills and renal and genital orifices; PLATE, Zool. Anz. xx, pp. 267-276.

*Chiton exoptandus*, South Australia; BEDNALL, P. Malac. Soc. London, ii, p. 152, fig. : n. sp.

*Cryptochiton*, growth of; HEATH, P. Ac. Philad. 1897, p. 299.

*Ischnochiton parkeri*, New Zealand; SUTER, P. Malac. Soc. London, ii, p. 186, fig. : *I. (Stenochiton) pilsbryanus*, p. 142, *I. pilsbryi*, p. 143, *I. lateanus*, p. 147, *I. thomasi*, p. 149, South Australia; BEDNALL, P. Malac. Soc. London, ii, figg. : n. spp.

*Tonicia calbucensis*, Chile and Patagonia; PLATE, Zool. Jahrb. Suppl. iv, p. 205, fig. : n. sp.

# VIII. BRACHIOPODA.

BY

E. R. SYKES, B.A., F.Z.S.,

ASSISTED BY

E. A. SMITH, F.Z.S., AND G. C. CRICK, F.G.S.

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- BONARELLI, G. [See PARONA & BONARELLI (25).]



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Palæozoic:—Fossils from Hof. a. Saale; LEYH, Zeitschr. Deutsch. geol. Ges. xlix, pp. 538–540.—Ottawa palæozoic basin, lists of species; AMI (2).—Fossils from Alaska; SCHUCHERT, Rep. U. S. Geol. Surv. xvii, Pt. i, pp. 898–906.—Palæozoic *Brachiopoda*; 48th Rep. N. York Mus. pp. 325–372, 14 pls.—Fossils from Argentina, with some new species; KAYSER (19).

Trias:—Fossils from the “Draxlehnerkalk” near Innsbruck; HAMMER, Verh. geol. Reichsanst. 1897, p. 316.

Permian and Carboniferous:—Lancashire Coal measures: new species; BOLTON (3).—Carboniferous Fossils from near Edinburgh; GOODCHILD, P. Geol. Ass. xv, p. 138.—Carboniferous fossils from St. Monans; GEIKIE, P. Geol. Ass. xv, p. 150.—Carboniferous fossils from near Stirling; MONCKTON, P. Geol. Ass. xv, p. 155.—Fossils from the *Productus* shales of Kumaon and Gurhwal, Himalayas, with new species of *Chonetes*, *Productus* and *Spirifer*; DIENER (5).—Carboniferous fossils of Polk County; KEYES, Rep. Iowa Geol. Survey, vii, pp. 331, 333.—Lists of fossils from the Carboniferous and Permian formations of Nebraska and Kansas; PROSSER (27).—Permo-Carboniferous fossils from the Kempsey District, N. S. Wales; DUN, Rec. Geol. Surv. N. S. Wales, v, pp. 180–182.—Carboniferous and Permo-Carboniferous fossils from N. S. Wales; ETHERIDGE (8).

Devonian:—Fossils from the Morte Slates, N. Devon; HICKS (13); GREGORY (12).—Fauna of the Marwood and Pilton beds of North Devon and Somerset, with n. sp. of *Renssellaeria*?, and *Rhynchonella* (*Camaro-tæchia*); WHIDBORNE (38).—Brachiopoda from Cornwall; COLLINS, Tr. geol. Soc. Cornwall, xii, p. 70.—Fossils from North Devon; WHIDBORNE, Quart. J. Geol. Soc. liii, pp. 450–456, figg.—Fossils from Santa Lucia (Spain), with some new species; ŒHLERT (24).—Correlation of the Devonian Faunas in Southern Illinois; WELLER (37).—Fossils from Eden, N. S. Wales; DUN, Rec. Geol. Surv. N. S. Wales, v, pp. 179 & 180.—Fauna of the Boulders occurring at the White Cliffs Opal-fields, N. S. Wales; DUN, *t. c.* pp. 162–168, figg.

Silurian:—Brachiopods of Sambre-et-Meuse; MALAISE, Ann. Soc. geol. Belgique, xxiv, pp. 257–261.—Revision of the fauna of the Guelph formation of Ontario, with new species; WHITEAVES (39).—Silurian of Tasmania, with new species; ETHERIDGE (7).

Ordovician:—Note on genus *Lingulepsis* with a new species; WALCOTT (36).—On *Orthis testudinaria*, auct., with *O. ignota*, *porrecta*, *futilis*, n. spp.; SARDESON (30).—Fauna of the Keisley Limestone with new species of *Orthis* (*Hebertella*?), *Atrypina*, *Syntrophia* and *Dayia*; REED (28).—Brachiopoda from Cornwall; COLLINS, Tr. geol. Soc. Cornwall, xii, p. 70.—Fossils from county Dublin, Ireland; REED, Quart. J. Geol. Soc. liii, pp. 537 & 538.—Fauna of the beds near Tramore, county Waterford; REED, Geol. Mag. 1897, pp. 502–506.—Fossils from the Galena-Trenton and Black River formations of Lake Winnipeg and its vicinity; WHITEAVES (41).—Systematic list, with references, of the fossils of the Hudson River or Cincinnati formation, Manitoba; WHITEAVES (40).

Cambrian:—*Protosiphon kempanum*, n. subg. (of *Siphonotreta*) and sp. from rocks of N. B. Canada; MATTHEW (20).

### III. SYSTEMATIC.

A brief general account of the *Brachiopoda* illustrated with 3 cuts; ECKSTEIN (6).

General account of the *Brachiopoda*; PERRIER, Traité de Zoologie, pp. 1501–1529, figg.

Classification and Catalogue of American Fossil Fauna; SCHUCHERT (32).  
†*Orthis testudinaria*, auct., subdivision of, with *O. ignota*, *porrecta*, *futilis*, n. spp., figg.; SARDESON (30).

†*Protosiphon*, n. subg. (of *Siphonotreta*), *kempanum*, n. sp. from the Cambrian rocks of N. B. Canada; MATTHEW (20).

†*Terebratulula isteiniensis*, n. sp. from the Upper Rauracian of Baden; HUG, Mt. Badisch. Geol. Landesanst. iii, p. 409, fig.

†*Terebratulina tejonensis*, n. sp. from the Tejon beds of California; STANTON, Rep. U. S. Geol. Surv. xvii, pt. i, p. 1037, fig.



## IX. BRYOZOA.

BY

FLORENCE BUCHANAN, B.Sc.

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## I. TITLES.\*

1. AMI, H. M. Notes on some of the fossil organic remains comprised in the Geological formations and outliers of the Ottawa Palæozoic basin. Tr. R. Soc. Canada (2) ii, Sect. iv, p. 151.
2. BIDENKAP, O. Bryozoen von Ost-Spitzbergen. Zool. Ergebn. der im Jahre 1889 auf Kosten der Bremer geographischen Gesellsch. von Dr. Wilh. Kükenthal und Dr. Alfred Walter ausgeführten Expedition nach Ost-Spitzbergen. Zool. Jahrb. Syst. x, pp. 609-639, pl. xxv.
3. BRAEM, F. Die geschlechtliche Entwicklung von *Plumatella fungosa*. Stuttgart, (E. Nägele), 4to, 1897, 48 pp., 4 pls., and Bibl. Zoologica, xxiii.
4. HALL, T. S. On the occurrence of the anchoring tubes of *Adeona* in the older tertiaries of Victoria, with an account of their structure. P. Soc. Vict. ix, pp. 1-4, pl. i.
5. HARMER, S. F. Note on new or rare British Marine Polyzoa. J. Mar. biol. Ass. (n. s.) v, pp. 51-53.

\* Papers published in 1897 which are not mentioned in this list will be recorded in 1898 Volume.

6. JOHNSON, J. Y. New Cyclostomous Bryozoa found at Madeira. *Ann. Nat. Hist.* (6), xx, pp. 60-65.
7. LOMNICKI, A. M. Materyaly do miocéniskiej fauny Lwowa i najbliższej okolicy. *Kosmos Polski*, xxii, Bryozoa, p. 34. [Contributions to the Miocene fauna of Lemberg.]
8. MATZDORFF, C. Jahresbericht über die Bryozoen für 1892 und 1893. *Arch. Naturg.* lix (1897), 2, pp. 45-76.
9. MEISSNER, M. (1) Moosthiere. Die Thierwelt Ost-Africas, iv. Berlin, (Dietr. Reimer), Lieferung i, 1896, 9 pp., 1 pl. and 4 figg. in text.
10. —. (2) Weiterer Beitrag zur Kenntniss der geographischen Verbreitung der Süßwasser-Bryozoengattung *Plumatella*. *Zool. Anz.* xx, pp. 173-174.
11. PARONA, F. & BONARELLI, G. Sur la faune du Callovien inférieur (Chanasien) de Savoie. *Mém. Ac. Savoie* (4), vi, p. 83.
12. PETTY, S. L. Polyzoa and Hydrozoa at Filey. *Naturalist*, No. 266, pp. 275-276.
13. THORNELLY, L. R. Notes on Rockall Island and Bank. vi. Report on the Polyzoa, *Tr. Irish Ac.* xxxi, pt. iii, pp. 79 & 80.
14. \*VÁNGEL, E. Moosthiere (Bryozoa) [des Plattensees]. *Result. wiss. Erforsch. Balatonsces*, pp. 137-143, 2 figg.
15. VANHÖFFEN, E. Die Fauna und Flora Grönlands. *Grönl. Exp. Ges. Erdkunde Berlin*, 1891-1893, Berlin, (Kühl), 4to, 1897, ii, pt. i; Marine Bryozoa, pp. 227-234; General description and list of spp., p. 94.
16. WARD, H. B. Statoblasts ("Winter Eggs") of *Pectinatella*. *Amer. micr. J.* xviii, p. 232.
17. WATERS, A. W. Notes on *Bryozoa* from Rapallo and other Mediterranean localities.—Chiefly *Cellulariidae*. *J. Linn. Soc. Lond.* xxvi, pp. 1-21, pls. i & ii, & 3 figg. in text.
18. WESENBERG-LUND, C. Biologiske Studier over Ferskvandsbryozoer. *Vid. Medd.* viii, 1896 (7), pp. 252-303, pls. i-iv. French Abstract, pp. i-xxxvi.

## II. BIOLOGY.

WESENBERG-LUND gives good descriptions and figures of the Danish freshwater forms. Of special importance is his account of the development of the cuticle in *Lophopus*, of a hibernating organ not previously described in several of the species, of the method of movement in *Cristatella* and other species and the relation of the power of movement to the development of the cuticle and to fission.

Ovicells in *Artea*; WATERS.

Development of *Plumatella*, BRAEM. Descriptions of larvæ of several species and of statoblasts, WESENBERG-LUND. Statoblasts of *Plumatella*, MEISSNER; of *Pectinatella*, WARD.

Classification:—Importance of tubular radicals and articulation, WATERS. Affinities of different freshwater Bryozoa with different marine groups, and the relationships of the Bryozoa as a whole to Sponges and Rotifers, WESENBERG-LUND.

Habits, &c.:—Symbiosis of *Plumatella* with *Paludina*, and enumeration of the different Gasteropods in Europe, Asia, Africa and Australia on which Statoblasts of *Plumatella* are found, MEISSNER (2) & (1). Significance of

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

Statoblasts; parasites of freshwater Bryozoa (an insect larva and an Oligochaet); Fossil Statoblasts of *Cristatella* and *Plumatella*; WESENBERG-LUND.

Methods:—MEISSNER (1).

### III. DISTRIBUTION.

#### GEOGRAPHICAL.

##### *Marine Forms.*

British Coasts:—4 spp. not hitherto ascertained to be British near Plymouth or the Scilly Isles; HARMER. 14 spp. at Filey; PETTY.—42 spp. off Rockall I. and Bank, 18 new to the locality; THORNELY.

Greenland:—List of spp. and short descriptions; VANHOEFFEN.

E. Spitzbergen:—9 spp. *Cyclostoma*, 37 *Cheilostoma*, and 4 *Ctenostoma*. Bryozoa-fauna compared with that of Finnland and Greenland, only 9 Spitzbergen species not in either; of these 1 sp. and 1 var. new; BIDENKAP.

Madeira:—6 spp. *Cyclostoma* (5 new); JOHNSON.

Mediterranean:—Near Genoa especially, 17 spp. chiefly *Cellulariidae* described, and remarks on other species; WATERS.

##### *Freshwater Forms.*

Denmark:—8 spp. *Phylactolæma*, 1 sp. *Gymnolæma*; WESENBERG-LUND.

L. Balaton:—List of spp.; VÁNGEL.

E. Africa:—9 spp. of *Plumatella* and one other sp.; MEISSNER (1).

#### GEOLOGICAL.

Fossil freshwater Bryozoa and their statoblasts; WESENBERG-LUND.

Tertiaries:—Miocene of Lemberg.—4 spp. *Cheilostoma*, 3 spp. *Cyclostoma*; LOMNICKI. Eocene of Victoria.—Anchoring tubes of *Adeona*; HALL.

Mesozoic:—Jurassics of Savoy (Lower Callovien).—New form of *Berenicea striata*; PARONA & BONARELLI.

Palæozoic:—Trenton Limestone of Ottawa basin and outliers.—50 spp. Bryozoa; AMI. Silurian of Ottawa basin.—2 spp.; AMI.

### IV. SYSTEMATIC.

#### ENTOPROCTA.

[None.]

#### ECTOPROCTA.

##### *GYMNOLÆMA.*

##### *CYCLOSTOMA.*

*Alecto simplex*, n. sp., Madeira; JOHNSON, Ann. Nat. Hist. xx, p. 60.

*Berenicea striata*, Haime (?), f. *reussi*, n. f., Jurassic (Chanaz); PARONA & BONARELLI, Mem. Ac. Savoie (4), vi, p. 83.



- Diastopora catillus*, and *D. pulchella*, n. spp., Madeira; JOHNSON, Ann. Nat. Hist. xx, pp. 61 & 62.
- Fron dipora maderensis*, n. sp., on coral, deep water off Madeira; JOHNSON, l. c. p. 64.
- Hornera pectinata*, Busk, on worm-cases attached to sponges, Madeira, oecium described; JOHNSON, l. c. p. 61.
- Lichenopora spinata*, n. sp., on halichondrine sponge from deep water off Madeira; JOHNSON, l. c. p. 62.
- Radiopora irregularis*, n. sp., Funchal Bay, Madeira, attached to shells etc.; JOHNSON, l. c. p. 63.

## CHEILOSTOMA.

- †*Adeona* in the Eocene of Victoria; HALL.
- Aetea*, ovicells; WATERS.
- (*Cellularia*), abolition of genus; WATERS.
- Flustra spitzbergensis*, n. sp., E. Spitzbergen; BIDENKAP, Zool. Jahrb. Syst. x, p. 617. *F. solida*, Stimps, referred to n. g. *Pseudoflustra*, Ib. t. c. p. 618.
- Hypophorella expansa*, Ehl., on British Coast, in Chaetopterus tubes; HARMER.
- Membranipora spitzbergensis* (Smith), n. nom. for (*M. arctica*, Smith), since this name already employed; BIDENKAP, p. 619.
- Micropora complanata*, Norm. on British Coast, (Scilly Isles), HARMER, p. 52.
- Pseudoflustra*, n. g., for *P. (Flustra) solida*, Stimps; BIDENKAP, p. 618.
- Schizoporella cristata*, Hincks, on British Coast in Pecten shells near Plymouth; HARMER, p. 53.

## CTENOSTOMA.

- Alcyonidium mytili*, Dalyell. n. var. from E. Spitzbergen, on algae; BIDENKAP, p. 634.

## . PHYLACTOLÆMA.

- Fredericella sultana*, Kraep. in Denmark; WESENBERG-LUND, Vid. Medd. viii, p. 260.
- Pectinatella*, statoblasts; WARD.
- Plumatella*, Table to distinguish Danish spp.; WESENBERG-LUND, p. 286: E. African spp.; MEISSNER (1). Statoblasts; MEISSNER. Development; BRAEM.

# X. CRUSTACEA.

(Including GIGANTOSTRACA AND PANTOPODA.)

BY

ALBERT WILLIAM BROWN, B.A., F.L.S.

*Christ Church, Oxford.*

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## INTRODUCTION.

WHERE so many of the papers published in any year are devoted to the description of new and the redescription of known species, it is always difficult to estimate aright the progress made in our knowledge of a group. This is especially true of the Arthropodan sub-divisions—*Crustacea*, *Arachnida*, and *Myriopoda*. The Record of the first-named for 1897 is slightly larger than that of 1896, consisting of 208 papers. Of these 104 deal with species, and a number of others consist of faunistic lists.

Papers dealing with Plankton *Crustacea* are fairly numerous. The reader is referred to those by ZACHARIAS (204-206), and by PITARD on the freshwater Plankton of certain Swiss Lakes (128-131). KOFOID (92), in *Science*, criticises the present methods of Plankton collecting, pointing out very serious defects.

GARSTANG (63, 64) continues the publication of results obtained last year on the respiratory adaptations of certain *Decapoda*. His papers have an important bearing on the question of the utility of specific characters, and are therefore of general interest. BOHN (13, 14) also deals with certain points in the respiration of *Crustacea*.

An interesting discussion has been carried on in the pages of *Natural Science*, entitled "Are the *Arthropoda* a natural group?" Many eminent specialists on the various classes have contributed to the discussion. The conservative view is strongly advocated by RAY LANKESTER (95).

JAWOROWSKI (87) deals with his theory of Arthropodan appendages, and BOUVIER (19), in an important comparative study of the *Dromiacea*, gives reasons for the view that Crabs are derived from Lobster-like ancestors. There are no other papers dealing with morphological theory.

Embryology is considered by several authors: BRANDES (24, 25) describes the spermatozoa and reproduction of *Decapoda*; BUTCHINSKY (27) gives an important account of the segmentation of the ovum in *Nebalia*; and SAMANSA (153) of the winter eggs of *Cladocera*. STINGELIN (187), in a paper dealing with variation, publishes some observations on the reproduction of *Cladocera*.

The histology of the muscle-fibre of *Cirripedia* has been studied by GRUVEL (72). Miss NEWBIGIN (112) describes the pigments of *Decapoda* in the *Journal of Physiology*.

The present Record contains seven papers dealing with the Crustacean nervous system and sense-organs. These comprise CARLTON'S (29) monograph on the "Brain and optic ganglion of *Leptodora*," BETHE'S (8) description of the nervous system of *Carcinus maenas*, NUSSBAUM & SCHREIBER'S (118) work on the "Peripheral," and ZOOGRAF'S (208) on the "Embryonic nervous system of *Crustacea*," and lastly, STEUER'S two papers (177, 178) on the "Anatomy and physiology of the eye of *Corycaeus*."

The placental parasitism of the *Monostrillidae* has been studied, both in its special and general aspects, by GIARD (65, 66), who also gives an account of the ontogeny of this group (69).

JANET'S interesting papers on the animals commensal with Ants (84, 85) must not be omitted. He describes several species of terrestrial Isopods found in their nests, and his papers are remarkable for the amount of patient observation they reveal.

Subterranean and cavernicolous *Crustacea* are considered at length by DOLLFUS (45), and by VIRÉ (190, 192, 193), who also discusses the degeneracy of their sense-organs and general adaptation to their environment.

GIARD (67) deals with the phenomena and probable parasitic cause of autotomy or self-mutilation amongst *Crustacea*.

Foremost amongst systematic works must stand HANSEN'S "Monograph

of the *Choniostomatidæ*" (77). It is beautifully illustrated by copper plates, and is in every way a valuable addition to the literature of *Crustacea*. GIESBRECHT (68) gives a systematic description of the "*Ascomyzontidæ*," and a systematic note on the *Copepoda* (70).

G. O. SARS continues the publication of the "*Crustacea of Norway*" (157). This, as the author's other works, is a model to systematists. Every single species is not only fully described, but adequately illustrated as well, forming an admirable contrast to that method of publishing descriptions of new species without figures, which can only end in the greatest confusion. Other papers by the same author deal with the "*Crustacea of the Caspian Sea*" (154, 155), and with the "*Phyllopoda of the Jana Expedition*" (156).

ORTMANN has written two valuable articles. The first is entitled "Carcinologische Studien" (120) and is principally systematic. The second discusses the "Geographical distribution of the *Trapezidæ*" (119).

HANSEN describes the *Isopoda* collected by the "Albatross" in the Pacific (76).

Palæontological papers are not very numerous. CALMAN (28) has studied the affinities of *Anaspides* with certain fossil forms; JONES & KIRBY (88) the Carboniferous *Ostracoda* of New Zealand; and WOODWARD (203) the higher *Crustacea* from the Cretaceous of Queen Charlotte and Vancouver Islands.

COUTIERE (36-39) adds to our knowledge of the *Alpheidæ* by description of a number of new forms from different regions, and RICHARD (144-149) does the same for the *Entomostraca*.

BOUVIER (15-20) describes new *Crustacea* from the Neotropical and Ethiopian regions, and in conjunction with MILNE-EDWARDS (53-55) new *Decapoda*. BRADY (22) adds a supplementary note to the report on the "Challenger" *Ostracoda*. MAN (101) publishes a report on new and rare *Brachyura* in the Hamburg Museum.

Amongst papers dealing with *Crustacea* from definite regions we may select the following, BOUVIER (20) on the *Paguridæ* of Europe, and BRADY (23) on British species of *Daphnia*, as noteworthy. The *Copepoda* and *Cladocera* of Germany form the subject of two papers by STEUER (179, 180).

The *Cumacea* and *Schizopoda* of Heligoland have been catalogued and described by EHRENBAUM (56), and the *Cirripedia* by WELTNER (198).

BIRULA (11, 12) continues his faunistic studies on the Russian Seas. Some new *Amphipoda* from the Copenhagen Museum are figured by STEBBING (176).

American *Crustacea* received a good deal of attention during 1897. Miss RATHBUN published synopses of many American and African species of *Decapoda* (136-140) and has, in the first published number of the "Annals of the Institute of Jamaica," given an exhaustive list of the *Decapoda* of that island (143). SCHACHT (158) has listed the North American species of *Diaptomus*, and SHARP (166) the freshwater *Ostracoda*.

We must not omit to notice the appearance of DRYGALSKI's volumes on the "Grönland Expedition," in which VANHÖFFEN gives some account of the *Crustacea* and *Pycnogonida* (51).

WEBER (196) describes the freshwater *Decapoda* of South Africa, WHITLEGGE (200) the *Crustacea* of Funafuti, and DOLLFUS (46-50) the terrestrial *Isopoda* of Argentina and other countries.

Of the *Gigantostraca* only 11 papers are recorded in this issue. This small number, and the defects of certain other parts of the Record, are due to its preparation before certain of the foreign periodicals had reached the country.

## I. TITLES.\*

[For GIGANTOSTRACA, see p. 41; for PANTOPODA, see p. 43.]

1. ABELOUS, J. E. & BIARNÈS, G. Oxydase des Crustacés. C.R. Soc. Biol. ser. x, iv, 1897, pp. 249-251.
2. ANON. A successful experiment in Lobster rearing. *Nature*, lvi, p. 455.
3. —. Are the *Arthropoda* a natural group? [Summary of opinion.] *Nat. Sci.* x, pp. 115-117.
4. AURIVILLIUS, C. W. S. Das Plankton der Baffins Bay und Davis Strait. Eine thiergeographische Studie. Festschrift Wilhelm Lilljeborg, pp. 181-211, pl. x.
5. BELL, F. J. The generic name of the river Crayfish. *Ann. Nat. Hist.* (6) xix, pp. 239 & 240.
6. BERNARD, H. M. Fossil *Apodidæ*. *Nat. Sci.* xi, pp. 397-403. (6 figg. in text.)
7. —. Are the *Arthropoda* a natural group? *Op. cit.* x, pp. 98-100.
8. BETHE, A. Das Nervensystem von *Carcinus maenas*. *Arch. mikr. Anat.* 1, pp. 446-546, pls. xxv-xxx & pp. 589-640, pl. xxxiii.  
BIARNÈS, G. [See ABELOUS & BIARNÈS (1).]
9. BIRGE, E. A. Notes on *Cladocera*. III. *Tr. Wisconsin Ac.* ix, 1893, pp. 275-317, pls. x-xiii.
10. —. The vertical distribution of the Limnetic *Crustacea* of Lake Mendota. *Biol. Centralbl.* xvii, pp. 371-374.
11. BIRULA, A. Materialuidlya Biologii i Zoogeographii Preimushchestvenns Russikikh morei. II. *Hydrozoa, Polychæta*, i *Crustacea* cobrayiuiiya d-rom A. C. Botkine v Eiiseiskoi i Obskoigybakh lyetom. 1895 g. *Annuaire Mus. St. Petersb.* 1897, pp. 78-116, pls. ix & x.  
Researches on Biology and Zoogeography of the Russian Seas. II. *Hydrozoa, Polychæta*, and *Crustacea*, collected by Dr Botkine in 1895, in the Gulfs of the Enisei and Obi.
12. —. III. Ocherk phaunui *Crustacea-Decapoda* morei Murmanskagho i Byelagho. [Essai d'une faune des crustacés décapodes de la mer Blanche et Mourmanne.] *T. c.* pp. 405-452, pls. xx-xxii.
13. BOHN, G. Sur le renversement du courant respiratoire chez les Décapodes. *C.R. Ac. Sci.* cxxv, pp. 539-542.
14. —. Sur la respiration du *Carcinus maenas*, Leach. *T. c.* pp. 441-444.  
Abstract in *J. R. Micr. Soc.* 1897, p. 533.
15. BOUVIER, E. L. Observations sur les Argulidés du genre *Gyropeltis* recueillis par M. Geay au Vénézuëla. *Bull. Mus. Paris*, 1897, pp. 13-19, 7 figg. in text.
16. —. Sur les *Cambarus* recueillis au Mexique par M. Diguët. *T. c.* pp. 224-228.

\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

17. [BOUVIER, E. L.] Sur deux Paguriens nouveaux trouvés par M. Coutière dans les Récifs Madréporiques à Djibouti. Bull. Mus. Paris, 1897, pp. 228-233, 6 figg. in text.
18. —. Observations sur les Crabes de la famille des Dorippidés. C.R. Ac. Sci. cxv, pp. 784-787.
19. —. Sur l'origine homarienne des Crabes; Étude comparative des Dromiacés vivants et fossiles. Bull. Soc. Philom. (8) viii, pp. 34-110, 43 figg. in text.
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## II. BIOLOGY.

### 1. ANATOMY AND MORPHOLOGY.

- Anatomy of the *Ascomyzontidae*; GIESBRECHT (68).  
 Parallel resemblances and dimorphism of *Eupagurus excavatus* and *variabilis*; EDWARDS & BOUVIER (55).  
 Relation of Crustacean head to Annelid prostomium; GOODRICH (71).  
 Structure of *Choniosomatidae*; HANSEN (77).  
 Structure of fossil *Apodidae*; BERNARD (5).  
 Systematic features of *Portunus nasutus*; GARSTANG (64).  
 Morphology of *Anaspides*; CALMAN (28).  
 Theory of appendages in *Arthropoda*; JAWOROWSKI (87).  
 Measurements of Crabs; CUNNINGHAM (41), THOMPSON (183).  
 Nervous system of *Carcinus maenas*; BETHE (8).—Peripheral nervous system of *Crustacea*; NUSSBAUM & SCHREIBER (118).—Embryonic nervous system in *Crustacea*; ZOGRAF (208).—Nervous system of *Cypris*; TURNER (186).  
 Structure of brain and optic ganglion of *Leptodora hyalina*; CARLTON (29).—Anatomy of eye of *Corycaeus*; STEUER (177 & 178).—Eye of *Niphargus virei*; VIRÉ (191).  
 Sense organs of cavernicolous *Crustacea*; VIRÉ (190 & 193).  
 Blind *Crustacea* of water conduits of Seine and Paris; VIRÉ (192).

### 2. PHYSIOLOGY.

- Physiology of the eye of *Corycaeus*; STEUER (177 & 178).  
 Respiration of *Carcinus maenas*; BOHN (14).—Respiratory phenomena of *Portunus nasutus*; GARSTANG (64).  
 Structural adaptations for respiration in *Crustacea*; GARSTANG (63).  
 Reversal of respiratory current in Decapods; BOHN (13).  
 Function of antero-lateral denticulations on margin of carapace of sand-burrowing Crabs; GARSTANG (64).  
 Relations of nucleus and protoplasm in cells of hepatic tubes of *Oniscus murarius*; PRENANT (134).

### 3. HISTOLOGY AND METHODS.

- Blood globules and lymph organs of *Crustacea*, p. 161; CUÉNOT (40).  
 Epithelium of mid-gut of Isopods; McMURRICH (104).  
 Muscle of *Carripedia*; GRUVEL (72).  
 Intra-vitam staining of nucleus and protoplasm; PRZESMYCKI (135).  
 Pigments in Decapod *Crustacea*; NEWBIGIN (112).



## 4. DEVELOPMENT, incl. EMBRYOLOGY, &amp;c.

Reproduction of *Daphniidæ* and *Lynceidæ*; STINGELIN (181).—Reproduction of the *Decapoda*; BRANDES (25).

Reproductive cells of *Cyclops*; HÄCKER (73).

Segmentation of ovum and formation of blastoderm in *Nebalia*; BUTCHINSKY (27).—Segmentation of winter eggs in *Cladocera*; SAMASSA (153).

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Ontogeny of *Monostrillidæ*; GIESBRECHT (69).

Life-history of American freshwater *Ostracoda*, p. 415; SHARPE (166).

Metamorphosis of *Trichodactylus*; MÜLLER (108).

Transformation of Hermit Crab; BOUVIER (21).

Breeding and development of the European Lobster; FULLARTON (62).—Lobster rearing; ANON. (2).

## 5. HABITS, COMMENSALISM, &amp;c.

Autotomy (self-mutilation) in *Carcinus maenas*; WIREN (202).—Autotomy caused by *Monostrillidæ*; GIARD (67).

*Isopoda* commensal with Ants; JANET, p. 7 (85).

Parasitism of *Monostrillidæ*, with formation of a placenta between them and tissues of host; GIARD (65).—General significance of placental parasitism; GIARD (66).

Wanderings of *Gammarus* and *Porcellio*; VOSSELER (194).

## 6. VARIATION AND EVOLUTION.

Meristic variation in the Edible Crab; PATTERSON (124).—Early local and individual variation in *Crustacea*; STINGELIN (181).

Origin of all other Crabs from the *Dromiaceæ*, which themselves are derived from *Homaridæ*; BOUVIER (19).

Utility of specific characters in *Crustacea*; GARSTANG (63).

## 7. BIOLOGY AND DISTRIBUTION.

Biology of *Alpheidæ* found at Djibouti; COUTIÈRE (38).—Biology of *Chonistomatidæ*; HANSEN (77).—Habitations and distribution of *Chonistomatidæ*; HANSEN (77).

Plankton:—AURIVILLIUS (4), FIELD (58), FOWLER (59), HERDMAN, &c. (80), KOFOID (92), NORDGAARD (116), PITARD (127-131), ZACHARIAS (204-206).

## 8. NOMENCLATURE.

Generic name of the Crayfish and Lobster; BELL (5), POCOCK (133), STEBBING (171-173).

Revision of the nomenclature of the *Brachyura*; RATHBUN (141).—Synonymy of genus *Palinurus*, p. 255; PFEFFER (125).

## 9. CLASSIFICATION.

Are the *Arthropoda* a natural group? ANON. (3), BERNARD (7), CARPENTER (30), CLAUS (34), HANSEN (75), HUTTON (83), JAWOROWSKI (86), KINGSLLEY (90), LANKESTER (94), LAURIE (96), POCOCK (132), STEBBING (174).

*Ascomyzontidæ*, divided into:—

- Subfam. 1. *Ascomyzontinæ*.  
 " 2. *Pontæcillinæ*.  
 " 3. *Rataniinæ*, nov.  
 " 4. *Dyspontiinæ*.  
 " 5. *Cancerillinæ*, nov.

GIESBRECHT (68).

Systematic position of *Anaspides*; CALMAN (28).

Classification of *Choniostomatidæ*; HANSEN (77).

Systematic note on *Copepoda*; GIESBRECHT (70).

Synopsis and classification of the *Cirripectida*; WELTNER (199).

### III. DISTRIBUTION.

Where necessary the Freshwater forms have been indicated thus (F), and the Terrestrial forms thus (T). Where no indication is given the forms mentioned are either Marine or Marine and Freshwater.

#### 1. GEOGRAPHICAL.

N.B.—Arrangement in each region alphabetical.

#### *Palearctic Region.*

- Austria-Hungary: *Cladocera* and *Copepoda* (F); STEUER (179).  
 Azores: *Tanaidæ* (7 n. spp.); DOLLFUS (44): n. sp. of *Dorippidæ*, n. sp. of *Calatheidæ*; EDWARDS & BOUVIER (53): *Sympagurus*, n. sp.; EDWARDS & BOUVIER (54).  
 Balaton Sea (= Platten Sea): *Crustacea*; DADAY (42A).  
 Belgium: *Isopoda*; LAMEERE (94).  
 Bergensfjord: *Crustacea* (Plankton); NORDGAARD (116).  
 Bevagna (Umbria): *Isopoda* (F); SILVESTRI (168).  
 Black Sea: *Crustacea*; FRIČ & VÁVRA (60).  
 Böhmerwald Sea: *Crustacea* (F); FRIČ & VÁVRA (60).  
 Brandenburg: Lower *Crustacea* (F); HARTWIG (78).  
 Britain: *Entomostraca*; BRADY (23).—Loch Doon, Ayrshire: *Copepoda* (F); T. & A. SCOTT (162).  
 Canary Is.: n. sp. of *Dorippidæ*; EDWARDS & BOUVIER (18).  
 Cape Ghir: n. sp. of *Calatheidæ*; EDWARDS & BOUVIER (53).  
 Cape Verd Is.: n. sp. of *Alpheus*; COUTIÈRE (37A): n. sp. of *Dorippidæ*; EDWARDS & BOUVIER (53).  
 Caspian Sea: Pelagic *Entomostraca*; SARS (154): *Crustacea*, 5 n. spp.; SARS (155).  
 Cevennes: *Isopoda* (subterranean); DOLLFUS (45).  
 Europe: *Paguridæ*; BOUVIER (20): *Isopoda* (T); DOLLFUS (50).  
 Fernando-Velosa: n. sp. of *Alpheus*; COUTIÈRE (37A).  
 French Coast: *Entomostraca*; TROUËSSART (185).  
 Hamburg: *Asellidæ* (F, T); MICHAELSEN (105).  
 Heligoland: *Schizopoda* and *Cumacea*; EHRENBAUM (56): *Cirripectida*; WELTNER (198).  
 Ireland: *Ostracoda*; SCHARFF (159).—Ireland (W. coast): *Copepoda*; THOMPSON (184).—Irish Seas: 1 n. sp. of *Amphipoda*, 1 n. sp. of *Isopoda*; WALKER (195).  
 Janina Lake: *Entomostraca* (1 n. sp.) (F); RICHARD (148).  
 Jan Mayen: *Entomostraca*; RICHARD (145).  
 Japan: n. sp. of *Alpheus*; COUTIÈRE (39).

- Jura (Pratteln): *Isopoda* (T); DOLLFUS (49).  
 Karajak Fjord: Plankton *Crustacea*; VANHÖFFEN (187) pp. 254-292.  
 Kiel Bay: *Crustacea*; BRANDT (26).  
 La Praya: n. sp. of *Calatheidae*; EDWARDS & BOUVIER (53).  
 Lake Brenet: Plankton *Crustacea*; PITARD (131).  
 Lake Chavonnes: Plankton *Crustacea*; PITARD (128).  
 Lake of Joux: Plankton *Crustacea*; PITARD (130).  
 Lake Lowerz: Plankton *Crustacea*; PITARD (129).  
 Leipzig: Plankton *Crustacea*; ZACHARIAS (206).  
 Liguria: Cavernicolous *Isopod*, n. sp.; SILVESTRI (169).  
 Mongolia: *Entomostraca* (2) (F); RICHARD (144).  
 Moscow: *Copepoda* (F); MATILE (102).  
 Norway: *Isopoda*; SARS (157).  
 Paris: *Entomostraca* (F); RICHARD (146).  
 Pays-Bas: *Crustacea* (list); MAITLAND (100).  
 Plön: *Entomostraca* (F); SCOURFIELD (164).  
 Puddefjord: *Crustacea* (Plankton); NORDGAARD (116).  
 Rockall Island and Bank: *Crustacea*; p. 77 (117).  
 Russian Seas: *Crustacea*; BIRULA (11).  
 Scutari Lake: *Entomostraca* (F); RICHARD (148).  
 Seine (Water Conduits); Cavernicolous *Crustacea*; VIRÉ (192).  
 Spitzbergen: *Entomostraca*; RICHARD (145): *Entomostraca* (F, T); SCOURFIELD (165).  
 Tatra Sea: *Crustacea*; DADAY (42).  
 Tessin (Alpine Lakes): *Crustacea* (F); FUHRMANN (61).  
 Teufels Sea: *Crustacea*; FRIČ & VÁVRA (60).  
 Trachenberg: *Crustacea* (F); ZACHARIAS (205).  
 Trien: *Cladocera* and *Copepoda*, n. spp. (F); STEUER (180).  
 Tundra Seas: *Branchiopoda*, including 2 new genera; SARS (156).  
 Vallombrosa (Apennines): *Isopoda* (F); DOLLFUS (46).  
 White Sea: *Decapoda*; BIRULA (12).

### *Nearctic Region.*

- Alaska: *Sphæromida*, n. g.; RICHARDSON (151).  
 America: *Ostracoda* (F) p. 417; SHARPE (166): *Sesarma*; RATHBUN (136).  
 Baffin's Bay: *Crustacea* (Plankton); AURIVILLIUS (4).  
 California: *Cancer*, n. sp.; RATHBUN (139).  
 Davis Strait: Plankton *Crustacea*; AURIVILLIUS (4); VANHÖFFEN (187).  
 Florida: *Sphæroma*, n. sp.; RICHARDSON (150).  
 Greenland: Plankton *Crustacea*, pp. 162-175: list of *Crustacea*, pp. 193-214; VANHÖFFEN (187).  
 Lake Mendota: Vertical distribution of *Crustacea*; BIRGE (10).  
 Manitoba: *Cladocera* (1 new species) (F); ROSS (152).  
 Mississippi: *Ethusa*, n. sp. (F); RATHBUN (138).  
 N. America: *Diaptomus* (1 new species); SCHACHT (158): *Ostracoda* (F); SHARPE (166). Texas: *Scalpellum* and *Balanus*; PILSBRY (126). Wisconsin: *Copepoda*, 4 new species (F); BIRGE (9).

### *Palaearctic and Nearctic Regions (Marine).*

- Atlantic: 1 new species of *Cypridina*; BRADY (22).  
 North Sea, Atlantic Ocean: Plankton *Crustacea*; VANHÖFFEN (187) pp. 293-320.  
 N. Atlantic: 3 new species *Copepoda*; HERDMAN, THOMPSON, & SCOTT (80).

*Neotropical Region.*

- Amazons: 1 new species of *Potamocarcinus*; ORTMANN (120).  
 Antigua: new genus of *Amphipoda*; STEBBING (176).  
 Argentina: *Isopoda* (T); DOLLFUS (47): *Æglea lævis*; WIERZEJSKI (201).  
 Bolivia: *Isopoda* (T); DOLLFUS (47).  
 Brazil: new species of *Petrolisthes*; ORTMANN (120).  
 Buenos Aires: *Entomostraca*; RICHARD (149).  
 Cuba: new species of *Amphipoda*; STEBBING (176).  
 Ecuador: new species of *Potamocarcinus*; ORTMANN (120).  
 Jamaica: *Decapoda*; RATHBUN (143).  
 Mexico: *Cambarus*, spp.; BOUVIER (16).  
 Pacific: *Isopoda*, 14 new species, 4 new genera; HANSEN (76).  
 Panama, Darien, and adjacent regions: *Decapoda*; NOBILI (114).  
 Rio Santiago: 2 new species of *Pseudothelphusa*; NOBILI (113).  
 S. and C. America: 6 new species of *Palicus*; RATHBUN (137).  
 S. America: 5 new species of *Pseudothelphusa*; RATHBUN (142): *Entomostraca*; RICHARD (147).  
 Valparaiso: new species of *Ostracoda*; BRADY (22).  
 Venezuela: new species of *Argulidae*; BOUVIER (15).  
 W. Indies: new species of *Sesarma*; RATHBUN (136): new species of *Amphipoda*; STEBBING (176).

*Ethiopian Region.*

- Africa: *Callinectes* and new species; RATHBUN (140). (E. Africa): a new Land Crab (T); HILGENDORF (81): *Copepoda*; MRÁZEK (106): *Ostracoda*; VAVRA (189): *Cladocera*, 4 new species; WELTNER (197). (S. Africa): Freshwater *Decapoda*; WEBER (196).  
 Djeddah: new species of *Alpheus*; COUTIÈRE (39).  
 Djibouti: new genus and 2 new species of *Paguridae*; BOUVIER (17): *Alpheidae*, 5 new species and new genus; COUTIÈRE (36).  
 Tropical Atlantic: new species of *Amphipoda*; STEBBING (176).

*Oriental Region.*

- Ceylon: new species of *Amphipoda*; STEBBING (176).  
 E. Archipelago: new species of *Cypridina*; BRADY (22).  
 Madras: new genus of *Ostracoda*; BRADY (22).

*Australian Region.*

- Flinder's Passage: new species of *Cypridina*, new species of *Philomedes*; BRADY (22).  
 Funafuti: *Crustacea*, 5 new species; WHITLEGGE (200).  
 Gellibrand River, Victoria: new genus of *Isopoda* (T); SPENCER & HALL (170).  
 New South Wales: *Crustacea* (57).  
 New Zealand: new species of *Amphipoda*; CHILTON (33): Deep sea *Crustacea*; HAMILTON (74): new species of *Sesarma*; ORTMANN (120).  
 Bay of Islands: 2 new species of Gammarids; THOMSON (182).  
 Port Jackson, Australia: new genus of *Amphipoda*; STEBBING (176).  
 Samoa: *Crustacea*; KRÄMER (93).  
 Tague Islands: new species of *Alpheus*; COUTIÈRE (37A).  
 Tahiti: new species of *Petrolisthes*; ORTMANN (120).  
 Thursday Island: new species of *Alpheus*; COUTIÈRE (37A).

## 2. GEOLOGICAL.

Cretaceous.—America: *Phyllopoda*; SCHUCHERT (161).—Baluchistan: 1 new species of *Ranina* (*Decapoda*); NOETLING (115).—Charlotte Islands: new species of *Homolopsis*; WOODWARD (203).—Kansas: *Cirripedia*; LOGAN (98).—Upper Schleswig: *Cirripedia*; LEONHARD (97).—Raudnitz: *Crustacea*; ZAHÁLKA (207).—Vancouver Island: new species of *Plagiolophus*, *Palæocorystes*, and *Callianassa*; WOODWARD (203).—Upper Cretaceous.—Dakota: new species of *Linuparus*; ORTMANN (122).

Carboniferous.—Ireland: *Ostracoda*, 5 new species; JONES & KIRKBY (88).

Chara-marl of Hitchin (Herts).—*Ostracoda*; CHAPMAN (32).

Silurian.—Portugal: *Crustacea*; DELGADO (43).

Strainberg Beds.—*Crustacea*; MERICKE (99).

## 3. PARASITIC.

On *Malacostraca*, the *Choniostomatidae*; HANSEN (77).

On *Nyctiphanes*, *Branchiophryxus nyctiphanæ*, n. g. & n. sp.; CAULLERY (31).

On *Polycirrus auriantiacus*, *Saccopsis alleni*, n. sp., p. 1464; LACAZE-DUTHIERS (52).

## IV. SYSTEMATIC.\*

## MALACOSTRACA.

## PODOPHTHALMA.

## DECAPODA.

[*Cf.* BOUVIER (16, 17, 18 & 20), COUTIÈRE (36, 37, 38 & 39), EDWARDS & BOUVIER (53, 54 & 55), HILGENDORF (81), KISHINONYE (91), MAN (101), MÜLLER (109 & 110), NOBILI (113 & 114), ORTMANN (119, 120, 121 & 122), PFEFFER (125), RATHBUN (136, 137, 138, 139, 140, 142 & 143), WEBER (196), WIERZEJSKI (201), WOODWARD (203).]

*Acanthonyx petiverii*, Jamaica, p. 6; RATHBUN, Ann. Inst. Jamaica, i.

*Acanthothelphusa*, n. subg. of *Potamon*, for *pæcilei*, *brazzeæ*, &c.; ORTMANN, Zool. Jahrb. Syst. x.

*Achelous spinimanus*, Jamaica, p. 24; RATHBUN, Ann. Inst. Jamaica, i.

*Actæa rugata*, Funafuti, p. 129; WHITLEGGE, Mem. Austral. Mus. iii.

*A. setigera*, *acantha*, p. 13, *rufopunctata-nodosa*, p. 14, Jamaica; RATHBUN, Ann. Inst. Jamaica, i.

*Æglea lævis*, occurrence in Argentina, &c.; WIERZEJSKI, Boll. Mus. Torino, xii, No. 281.

*Albunea oxyophthalma*, Jamaica, p. 42; RATHBUN, Ann. Inst. Jamaica, i.

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- † *S. maximum, appoliense*, chalk, Upper Schleswig, p. 63, pl. vi, figg. 13a & b; LEONHARD, Palæontogr. xxiv.
- † *Squama*, n. g. defined, for *spissa*, p. 187, *luta*, p. 188, Cretaceous of Kansas, LOGAN, Kansas Quart. vi, n. spp.
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## GIGANTOSTRACA,

i.e., TRILOBITA, XIPHOSURA, EURYPTERIDA.

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## III. DISTRIBUTION.

Bohemia: Palæozoic *Gigantostraca*; SEMPER (11).

Ottawa: Palæozoic Trilobites; AMI (1).

Portugal: Silurian Trilobites; DELGADO (5).

Tasmania: Silurian Trilobites; ETHERIDGE (6).

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 † *Encrinurus*, cf. *seebachi*, W. Prussia, Diluvium, p. 34, pl. i, fig. 5; KIESOW, Schr. Ges. Danzig, ix.  
 † *Hausmannia meridianus*, p. 32, pl., figg. 4 & 6, sp. ind., p. 32, pl., fig. 5, Silurian of Tasmania; ETHERIDGE, P. Soc. Tasmania, 1896.  
 † *Illænus johnstoni*, Silurian, Tasmania, p. 33, pl., fig. 3, ETHERIDGE, P. Soc. Tasmania, 1896, n. sp.  
 † *I. ræmeri*, p. 35, *angustifrons*, p. 37, pl. i, fig. 6, cf. *sphaericus*, p. 38, W. Prussia, Diluvium; KIESOW, Schr. Ges. Danzig, ix.  
 † *Lichas angusta*, W. Prussia, Diluvium, p. 32, pl. i, figg. 4a & 4b; KIESOW, *t. c.* † *L. granulatus* (!), Haina, p. 67, pl. i, fig. 27; BEYER, Verh. Ver. Rheinland, liii, 1896. † *L. (Uralichas) ribeiroi*, p. i, pl.; DELGADO, Trav. geol. Portugal, 1897.  
 † *Ogygia lignieresi*, p. 170; BRÖGGER, *Nyt Mag. Naturv.* xxxvi, 1897.  
 † *Phacops lævigata*, Diluvium, W. Prussia, described, p. 29; KIESOW, Schr. Ges. Danzig, ix.  
 † *Proetus subplanatus*, p. 59, pl. i, figg. 1-11, *suborbitatus*, pl. i, fig. 12, *crassimargo*, pl. i, fig. 14, p. 63; BEYER, Verh. Ver. Rheinland, liii, 1896.  
 † *Stimoniu*, cf. *acuminata*, Hungary, Palæozoic, p. 84, pl. xii, fig. 10; SEMPER, Beitr. Pal. Oesterr.-Ung. xi.  
 † *Tropidocoryphe novaki*, Haina, p. 65, pl. i, figg. 16-22, BEYER, Verh. Ver. Rheinland, liii, 1896, n. sp.

## EURYPTERIDA.

- † *Eurypterus acrocephalus*, Hungary, Palæozoic, p. 85, pl. xiii, SEMPER, Beitr. Pal. Oesterr.-Ung. xi, n. sp.  
 † *Pterygotus bohemicus*, p. 73, pl. xii, fig. 8, *nobilis*, p. 76, pl. xii, fig. 9, *affbohemicus*, p. 77, cf. *problematicus*, p. 81; SEMPER, *t. c.*  
 † *P. barrandei*, p. 78, pl. xii, figg. 1-4, *beraunensis*, p. 81, pl. xii, figg. 5-7, *bluhai*, p. 82, Hungary, Palæozoic, SEMPER, *t. c.* n. spp.

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2. VANHÖFFEN, E. Die Fauna und Flora Grönlands. *Pycnogonida*, pp. 214 & 215, in Grönland-Expedition, ii.  
 [See DRYGALSKI (51).]



# XI. ARACHNIDA.

BY

ALBERT WM. BROWN, B.A., F L.S.,

*Christ Church, Oxford.*

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## INTRODUCTION.

AN analysis of the subjoined list of papers reveals a remarkable increase in specific descriptions during 1897, the systematic part of this Record being more than twice as large as that of 1896. The reason for this is two-fold. The Recorder was compelled owing to the short time given him in which to prepare last year's Record to omit certain large papers—e.g. CAMBRIDGE, O. P. (15), in the *Biologia Centrali-Americana*—which have added to the bulk of the present issue. The second cause of increase is to be found in the publication of large Systematic works of which Part I, vol. II, of SIMON's "*Araignées*" (21) is the most important. Even when allowance is made for these the Record still shows a greater number of papers than its predecessor. The concluding part of BECKER's "*Arachnides de Belgique*" (5) and some parts of BERLESE's "*Acari, Myriop. et Scorp. ital.*" (7) were published in 1896, but were not available for the Recorder till this year.

ACLOQUE (1) in a paper on the relation of Insects to other Arthropoda refers to the *Arachnida*. Of somewhat similar bearings are the series of papers entitled "*Are the Arthropoda a natural group?*" JAWOROWSKI (56)

discusses some matters relating to his theory of Arthropodan appendages. Epithelial secretions in the reproductive apparatus of *Arachnida* are considered by BALBIANI (3). In the Records of the Australian Museum the Fauna of Funafuti is described and RAINBOW (114) deals with the *Arachnida*, publishing descriptions of a number of new species principally of the genus *Epeira*.

F. O. PICKARD CAMBRIDGE'S papers (17 & 18) on Cteniform spiders from various parts of the world merit special attention as also do the first few parts of his systematic account of the spiders of Central America in *Biologia Centrali-Americana* (18 a).

Spiders from various parts of the world form the subject of many papers.

Pocock (111) describes a collection from the Moluccas. LENZ (75) describes those from Greenland, THORELL from Burina (142), Pocock (109) the *Mygalomorpha* from Africa. PAVESI gives an account of *Arachnida* from the Zambesi (90) and Somaliland (91). Pocock further describes the *Ctenizidae* of South and West Australia (103).

SIMON'S papers this year describe a vast number of new species from various regions. Oriental *Araneae* (122 & 128), Neotropical (124, 132 & 133) and Ethiopian (127) occupy several papers. He has also listed some Swiss *Araneae* (123) and published Part III of "The Spiders of St Vincent" (130). Three other papers (125, 126 & 129) are composed of miscellaneous specific descriptions.

Acari as usual form the subject of many papers. TROUESSART describes the wine mites, BRANDES (12) gives account of *Argas reflexus* as a parasite of man, whilst FAVETTE & TROUESSART (35) have applied photography to the study of *Sarcoptidae*. MICHAEL (83) devoted his Presidential address to the Royal Microscopical Society to a résumé of the Anatomy of *Bdella*. He also in another place criticises some views of the classification of the *Oribatidae* (82). JOURDAIN has two interesting memoirs in the "Comptes Rendus," viz. on the "Pseudolarval copulation of *Sarcoptidae*" (58) and on the "Development of *Trombidium*" (59). NEUMANN continues his Revision of the *Ixodidae* (86) and OUDEMANS (88) his list of Dutch *Acari*. Other interesting memoirs on Acari comprise MICHAEL'S on Polar Acari of the Jackson-Harmsworth Expedition (84), CANESTRINI'S on Acari from Burma and New Guinea (19 & 20), KRAMER'S on the *Trombididae* of Madagascar (72) and lastly CALL'S description of two new species from the Mammoth Cave of Kentucky.

The subdivision of Acari most studied would appear to be the *Hydrachnida*. PIERSIG, especially, devotes five papers to them, dealing principally with those found in Germany (95-99). PISAROVIC (102) on Bohemian, DADAY on Platten Sea (31) and KENIKE (64) on E. African forms must also be mentioned.

It is a pleasure to see the smaller groups of Arachnida receiving more attention this year. To the literature of Scorpions Pocock (104, 106, 107 & 112) and KRAEPELIN (66, 67 & 69) are the principal contributors, both dealing with E. African forms amongst others.

*Pedipalpi* are discussed by Pocock (106) and by LÖNNBERG (76 & 77), whilst PEREYASLAWZEWA (92 & 93) publishes researches on their development. HANSEN & SØRENSEN discuss the structure and relationships of the order Palpigradi (44).

Pocock (105) & KRAEPELIN (68) also contribute the greater part of the literature on Opiliones. DADAY (30) describes *Pseudoscorpiones* from New Guinea.

Lastly, special attention must be drawn to Mr Pocock's paper on the Tropical African *Solifugae* (108). As it contains a most interesting account of the habits of these animals it possesses an importance for other than Systematists on this order.

This Record must not be allowed to pass without some protest being entered against the present method of publishing multitudes of specific descriptions without figures—diagrammatic or otherwise. Doubtless the descriptions of a thoroughly trained and competent arachnologist may be better than bad figures and it is not for one moment contended that it is always necessary to publish figures, but some radical changes from the present fashion are necessary, or future systematists will find the task of grappling with the literature of the group almost an impossible one.

The Recorder would also like to ask Systematists, when publishing papers, to notify the families to which they consider the genera to belong. No two arachnologists seem to agree on the limits of any particular family and a great deal of confusion exists through the lack of any clue to the author's views. In consequence, this year the Recorder has been regretfully compelled to arrange the Acari alphabetically, there being no possibility of placing the genera otherwise.

Finally the Recorder most gratefully thanks Mr R. I. Pocock (of the British Museum), for much valuable help in harmonising conflicting views and in placing genera in the Systematic list.

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### 1. General.

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The cribellum and calanistrum of *Arachnida*, p. 121, BECKER, *Arach. de Belgique* II, in *Ann. Mus. Belgique* XII.

Epithelial secretions in female reproductive apparatus of *Arachnida*; BALBIANI (3).

Lymph organs of *Arachnida*; CUÉNOT (27), p. 162.

Relation of Arachnid head to Annelid prostomium; GOODRICH (42).

Relationship of *Arachnida* to Insects; ACLOQUE (1).

Theory of appendages in the *Arthropoda*; JAWOROWSKI (56).

Visual centres of Arthropods; PATTON (89).

### 2. *Scorpiones*.

Habit, of Scorpion, of carrying a flower; NEWNHAM (87).

### 3. *Pedipalpi*.

Discussion of the order *Palpigradi* and its affinities; HANSEN & SÖRENSEN (44).

Early development of *Pedipalpi*; PEREYASLAWZEWA (92). Later development of *Pedipalpi*; PEREYASLAWZEWA (93).

### 4. *Solifugæ*.

General account of the *Galeodidae*; BERNARD (8).

Habits of *Solifugæ*; POCOCK (108), p. 267.

### 5. *Pseudoscorpiones*. 6. *Opiliones*.

KNAB (62).

### 7. *Araneæ*.

*Araneida* in nests of Ants; JANET (53).

Capture and disarming of bees by *Thomisus*; FABRE, *Souvenirs entomologiques* v, pp. 299-302.



Geographical variation of *Liobunum vittatum* in N. America; WEED (149), pp. 264-270.

Mimicry in Brazilian Spider; GOELDI (41).

Stridulating organ in *Theraphosinae*; POCOCK (109), p. 771.

Classification of *Theraphosidae*; POCOCK (109), p. 742.

### 8. *Acari*.

Digestive organs of *Acari*; BERLESE (6).

Organ of fixation of larva of *Trombidium*; TROUESSART (136).

Development of *Trombidium holosericeum*; JOURDAIN (59).

Pseudo-larval copulation in *Sarcoptidae*; JOURDAIN (58).

Period required for hatching different genera of *Hydrachnidae*; SOAR (133).

Heliotaxis in larva of *Bryobia ribis*; THOMAS (140).

*Acari* commensal with Ants; JANET (53), p. 8. List of *Acari* found in the nests of *Lasius mixtus*; JANET (52), p. 19.

Topographical distribution of Marine *Acari* on French coasts; TROUESSART (139).

Systematic account of the *Hydrachnidae*; PIERSIG (100).

Classification of the *Oribatidae*. Criticism of Oudemann's views; MICHAEL (82), p. 34.

Classification of *Sarcoptidae* & *Oribatidae*; BERLESE (7).

Microphotography of *Acari*; FAVETTE & TROUESSART (35).

### 9. *Tardigrada*.

Pigment in *Tardigrada*; RYWOSCH (119).

## III. DISTRIBUTION.

### A. GEOGRAPHICAL.

#### *Palearctic Region.*

#### I. SCORPIONIDÆ.

Geographical Distribution of Scorpions; LÖNNBERG (77).

Russia; *Buthus*, n. sp.; BIRULA (10).

#### II. PEDIPALPI.

Geographical distribution of *Pedipalpi*, LÖNNBERG (77), p. 203.

#### III. ARANEÆ.

Edinburgh; CARPENTER & EVANS (22).

Belgium; BECKER (5).

Bex, Switzerland; SIMON (123).

Hamburg; BÜSENBERG (11).

Spain; *Anyphæna*, n. sp.; SIMON (125).—Sierra Nevada; *Tomopisthes*, n. sp.; SIMON (125).

St Vincent; 46 n. spp. 3 n. gg.; SIMON (130, 124).

Algeria; *Anyphæna*, n. sp.; SIMON (125).

Batoum; *Tegenaria*, n. sp.; SIMON (129).

Syria; *Anagraphis*, 2 n. spp.; SIMON (125).

Turkestan; *Agræca*, n. sp.; SIMON (129).

## V. PSEUDOSCORPIONES.

Belgium; BECKER (5).

## VI. OPILIONES.

Belgium; BECKER (5).

Hamburg; *Phalangidæ*, n. sp.; KRAEPELIN (68).

## VII. ACARI.

Great Britain; *Hydrachnidæ*; SOAR (134).

Holland; *Trombididæ*; OUDEMANS (88).

Germany; *Hydrachnidæ*; KÆNIKE (63); PIERSIG (97 & 98), 2 n. spp.—Borkum; *Oribatidæ*, 2 n. spp.; KRAMER (71).—Trachenberg; *Hydrachnidæ*; ZACHARIAS (151).—Balaton Sea; *Hydrachnidæ*; DADAY (31).—Tatra Sea; *Acari*; DADAY (29).—Bohemia; *Hydrachnidæ* (3 n. spp.); PISAROVIC (102).—Bohmerwald Sea, Black Sea, Teufel Sea; *Hydrachnidæ*; FRIČ & VÁVRA (37).

Tessin (Alpine Lakes), *Acari*, 1 sp.; FUHRMANN (38).

Italy; *Acari*; BERLESE (7).—Naples; *Halacarus*, n. sp.; VOINOV (146).

Algeria; *Trombididæ*, n. gen.; CAMBRIDGE, O. P. (16).

Syria; *Dermacentor*, n. sp.; NEUMANN (86).

Tokio; *Hæmaphsalia*, n. sp.; NEUMANN (86).

## VIII. TARDIGRADA.

Spitzbergen; SCOURFIELD (120).

*Ethiopian Region.*

## I. SCORPIONIDÆ.

E. Africa; KRAEPELIN (66).—Kota Kota, Lake Nyasa; *Uroplectes*, n. sp.; *Opisthacanthus*, n. sp.; POCKOCK (104).—Tanganyika; *Heterometrus*, n. sp.; KRAEPELIN (67).—Zambesi; PAVESI (90).—S.W. Africa; *Cheloctenus*, n. sp.; KRAEPELIN (67).

Madagascar; *Hadogenes*, n. sp.; KRAEPELIN (67).—Seychelles; *Archisometrus*, n. sp.; KRAEPELIN (67).

## II. PEDIPALPI.

Assab; *Phrynus*, n. sp.; FENIZIA (36).

## III. ARANEÆ.

Africa; *Mygalomorphae*; POCKOCK (109).—Muscat; 3 n. spp.; SIMON (127).—British Central Africa; JOHNSTON (57).—E. Africa; *Araneus*, n. sp.; *Ceto*, n. sp.; *Ctenus (Leptoctenus)*, n. sp.; SIMON (125).—Zambesi; PAVESI (90).—Natal; *Clubiona*, 4 n. spp.; *Pronophea*, n. sp.; *Ceto*, n. sp.; *Chiracanthium*, n. sp.; *Thaumastochilus*, n. sp.; SIMON (129).—Transvaal; *Nemoscolus*, 2 n. spp.; *Sparassus*, n. sp.; *Micrommata*, n. sp.; *Orthobula*, n. sp.; SIMON (125).—S. Africa; *Ctenus (Leptoctenus)*, n. sp.; SIMON (125).—British S. Africa; POCKOCK in JOHNSON (57).—Port Elizabeth; *Clubiona*, 2 n. spp.; SIMON (129).—W. Africa; *Politya*, n. sp.; *Remmius*, 2 n. spp.; *Epidius*, n. sp.; *Stasina*, n. sp.; *Ctenus (Leptoctenus)*, 2 n. spp.; *Caloctenus*, n. sp.; SIMON (125).—Sierra Leone; *Anahita*, n. sp.; *Apostenus*, n. sp.; *Orthobula*, n. sp.; SIMON (125).—Congo; *Anahita*, n. sp.; SIMON (125).—Madagascar; *Chiracanthium*, n. sp.; *Rhitynna*, n. sp.; SIMON (125).

## IV. SOLIFUGÆ.

Aden; *Blossia*, n. sp.; Pocock (108).—E. Karoo; *Solpuga*, n. sp.; Pocock (108).—Natal; *Solpuga*, 2 n. spp.; Pocock (108).—Nyasaland; *Ceroma*, n. sp.; Pocock (108).—Mashonaland; *Solpuga*, 2 n. spp.; Pocock (108).—Somaliland; *Solpuga*, n. sp.; Pocock (108).—Zambesi; PAVESI (90).

## VII. ACARI.

Khartoum; *Ixodidae*, n. sp.; NEUMANN (86).—Somaliland; PAVESI (91).—Congo; *Dermacentor*, n. sp.; NEUMANN (86).—E. Africa; *Hydrachnidæ*, 5 n. spp.; KENIKE (64).—Transvaal; *Ixodidae*, n. sp.; NEUMANN (86).

Madagascar; *Trombidium*, n. sp.; KRAMER (72); *Hæmaphysalis*, 2 n. spp.; NEUMANN (86).

*Oriental Region.*

## I. SCORPIONIDÆ.

India; *Scorpionidae*, 16 n. spp.; Pocock (112).—Tanga; *Babycurus*, n. sp.; KRAEPELIN (67).—Ceylon; *Isometrus*, n. sp.; Pocock (111).

## III. ARANEÆ.

India; *Heteropoda*, n. sp.; *Palystes*, n. sp.; SIMON (125); *Agelena*, n. sp.; SIMON (129).—Dehra Dun; *Apochinomma*, n. sp.; *Ctenus*, n. sp.; *Sparassus*, n. sp.; *Echemus*, n. sp.; *Callilepis*, n. sp.; *Edignatha*, n. sp.; SIMON (122).—Dekkan; *Heteropoda*, n. sp.; *Acattyma*, n. sp.; *Thanatus*, n. sp.; SIMON (122).—Guzerath, N.; *Drassodes*, n. sp.; *Sphebanus*, n. sp.; SIMON (122).—Himalayas; *Heteropoda*, 2 n. spp.; *Sparassus*, n. sp.; SIMON (122).—Konkan; *Sparassus*, n. sp.; SIMON (122).—Poona; *Scytodes*, n. sp.; *Plator*, n. sp.; SIMON (122).—Kurrachee; 11 n. spp.; SIMON (128).—Mathéran; 4 n. spp.; SIMON (128).

Ceylon; *Ctenus*, 3 spp., 2 new; CAMBRIDGE, F. O. P. (18).—Colombo; *Orthobula*, n. sp.; SIMON (125).

Indo-China; *Araneus*, n. sp.; *Poltys*, n. sp.; SIMON (125).—Burmah; THORELL (142); *Ctenus*, 4 spp.; *Leptoctenus*, 2 spp.; CAMBRIDGE, F. O. P. (18).—Singapore; *Stasina*, n. sp.; *Acantheis*, n. sp.; *Orthobula*, n. sp.; SIMON (125).—Pinang; *Ctenus*, 2 spp., new; CAMBRIDGE, F. O. P. (18).

Nicobar; *Dolopæus*, sp.; CAMBRIDGE, F. O. P. (18).

Sumatra; *Ctenus*, 2 spp.; *Acanthoctenus*, sp.; *Leptoctenus*, sp.; *Nydia*, sp.; CAMBRIDGE, F. O. P. (18).

Nias; *Acanthoctenus*, sp.; CAMBRIDGE, F. O. P. (18).

Java; *Rhitymna*, 2 n. spp.; *Adrastis*, n. sp.; *Caloctenus*, n. sp.; *Matidia*, n. sp.; *Paraplectana*, 2 n. spp.; SIMON (125); *Ctenus*, n. sp.; *Phlogiellus* (n. g.), n. sp.; Pocock (111).

Borneo; *Ctenus*, 4 spp., 2 new; *Thalassius*, 2 n. spp.; *Acanthoctenus*, sp.; CAMBRIDGE, F. O. P. (18); *Bathippus*, n. sp.; *Acantheis*, n. sp.; *Heteropoda*, n. sp.; *Oliophthalmus* (n. g.), n. sp.; *Ctenus*, n. sp.; Pocock (111).

Batjan; *Oliophthalmus*, n. sp.; *Tapponia*, n. sp.; *Thelctiopis*, n. sp.; Pocock (111).

Philippines; *Prychia*, n. sp.; SIMON (125).—Manila; *Tychicus*, n. sp.; *Epidius*, n. sp.; SIMON (125); *Edignatha*, n. sp.; SIMON (129).—Luzon Is.; *Syrisca*, n. sp.; *Matidia*, n. sp.; SIMON (125); *Ctenus*, n. sp.; CAMBRIDGE, F. O. P. (18).

Taprobane Is.; *Matidia*, 3 n. spp.; SIMON (125); *Sphingius*, n. sp.; *Edignatha*, 7 n. spp.; SIMON (129).

## VI. OPILIONES.

Ceylon; *Pettalus*, n. sp.; Pocock (105).—Bangkok; *Oncopus*, n. sp.; Pocock (105).—Borneo; *Gagrella*, n. sp.; *Pelitnus*, n. sp.; *Oncopus*, n. sp.; *Stylocellus*, n. sp.; Pocock (105).

## VII. ACARI.

India; *Hæmaphysalis*, n. sp.; NEUMANN (86).—Rannad; *Hæmaphysalis*, n. sp.; NEUMANN (86).

Burma; CANESTRINI (19).

Sumatra; *Hæmaphysalis*, n. sp.; *Ixodidae*, n. sp.; NEUMANN (86).

## *Australian Region.*

### I. SCORPIONIDÆ.

Funafuti; n. sp.; RAINBOW (114).

### III. ARANEÆ.

New Guinea; *Lobetina*, n. sp.; *Ctenus* (*Leptoctenus*), n. sp.; SIMON (125).—Celebes; *Gasteracantha*, n. sp.; *Heteropoda*, n. sp.; *Ctenus*, 2 n. spp.; Pocock (111).—Amboina; *Ordogarius*, n. sp.; SIMON (125).—Jolo Is.; *Matidia*, n. sp.; SIMON (125).—Halmahera; *Cocalodes* (n. g.) (*Attidae*), 2 n. spp.; *Plexippus*, n. sp.; *Heteropoda*, n. sp.; *Hygropoda*, n. sp.; *Oliophthalmus* (n. g.), n. sp.; Pocock (111).—Moluccas; Pocock (111).

Funafuti; 12 n. spp.; RAINBOW (114).

New Holland; *Nicodamus*, n. sp.; *Asadipus*, n. sp.; SIMON (129); *Cteninae*; CAMBRIDGE, F. O. P. (18).—W. Australia; *Anidiops*, n. sp.; Pocock (103).

New Zealand; URQUHART (144).

### V. PSEUDOSCORPIONES.

N. Guinea; 5 n. spp.; DADAY (30).

Funafuti; n. sp.; RAINBOW (114).

## VII. ACARI.

New Guinea; 43 n. spp., 3 n. genn.; CANESTRINI (20).

Funafuti; n. sp.; RAINBOW (114).

## *Nearctic Region.*

### III. ARANEÆ.

N. America; CAMBRIDGE, F. O. P. (17).—Ottawa; *Icius*, n. sp.; *Thargalia*, n. sp.; BANKS (4); HARRINGTON (45).—Washington; *Theridium*, n. sp.; BANKS (4); *Tegenaria*, 2 n. spp.; SIMON (129).—California; *Theridium*, n. sp.; CURTIS (28).—Mesilla; *Icius*, n. sp.; COCKERELL (25).—Chicago; *Plasiocrærius*, n. sp.; BANKS (4).—Texas; *Teminius*, n. sp.; *Theridium*, n. sp.; BANKS (4).—Florida; *Anypheana*, n. sp.; BANKS (4).

Greenland; 3 n. spp.; LENZ (75); VANHÖFFEN, Grönland, Exped. II. (145), pp. 149 & 158.

## VII. ACARI.

Ottawa; HARRINGTON (45).—United States; *Dermacentor*, n. sp.; NEUMANN (86).—Mammoth Cave; *Acari*, 2 n. spp.; CALL (14).—Cape Flora, Northbrook Is., Franz-Josef Archipelago; MICHAEL (84).—Greenland; 3 n. spp.; KRAMER (70); VANHÖFFEN (145), pp. 150 & 158.

## VIII. TARDIGRADA.

Greenland; Fresh water *Tardigrada*; VANHÖFFEN (145), p. 175.

*Neotropical Region.*

## I. SCORPIONIDÆ.

Brazil; *Tityus*, 2 n. spp.; Pocock (107).—Amazons; *Tityus*, 3 n. spp.; *Brotheas*, sp.; *Brotochactas*, n. sp.; Pocock (106).—Curaçao, *Diplocentrus*, n. sp.; KRAEFELIN (67).—Porto Rico; *Tityus*, n. sp.; Pocock (107).—Trinidad; *Tityus*, 3 n. spp.; Pocock (107).—Colombia; *Tityus*, 2 n. spp.; Pocock (107).—Ecuador; *Heterochactas*, n. sp.; *Tityus*, 2 n. spp.; KRAEFELIN (67).

## II. PEDIPALPI.

Para; *Admetus*, sp.; *Thelyphonellus*, sp.; *Heterophrynus*, sp.; Pocock (106).

## III. ARANEÆ.

C. America; 1 n. g., 6 n. spp.; CAMBRIDGE, F. O. P. (18a); 17 n. genn., 86 n. spp.; CAMBRIDGE, O. P. (15).

Antilles; *Odo*, n. sp.; SIMON (125).—Santa Domingo; *Aysa*, 2 n. spp.; SIMON (125).—Costa Rica; *Ctenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Demerara; *Ctenus*, n. sp.; *Lycotenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Venezuela; *Caloctenus*, n. sp.; *Haptisus*, n. sp.; *Tennida*, 2 n. spp.; *Theridiosoma*, 3 n. spp.; *Spilasma*, n. sp.; *Micrathena*, 3 n. spp.; *Glyptogona*, n. sp.; *Haptisus*, n. sp.; SIMON (125).

Colombia; *Ctenus*, n. sp.; *Lycotenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Ecuador; *Micrathena*, 2 n. spp.; *Pænula*, n. sp.; *Nonianus*, n. sp.; *Origes*, n. sp.; *Tuticanus*, n. sp.; *Eutichurus*, n. sp.; *Ölbus*, n. sp.; SIMON (125).—Brazil; *Idibaha*, n. sp.; *Agasthostichus*, n. sp.; *Micrathena*, 4 n. spp.; *Taczanowskia*, 3 n. spp.; *Caira*, n. sp.; *Stasina*, n. sp.; *Enoploctenus*, n. sp.; *Phymatoctenus*, n. sp.; *Syrisca*, n. sp.; *Eutichurus*, n. sp.; *Oxyzoma*, 3 n. spp.; *Ölbus*, n. sp.; *Isigonia*, n. sp.; *Ceto*, n. sp.; SIMON (125); *Ctenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Pernambuco; *Acanthoctenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Santarem; *Ctenus*, 7 n. spp.; *Acanthoctenus*, n. sp.; *Lycotenus*, 3 n. spp.; *Lycotenus*, 2 n. spp.; *Ctenus*, 7 n. spp.; *Acanthoctenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Le Para; *Eutichurus*, n. sp.; SIMON (125).—Amazons; *Prusias*, n. sp.; *Araneus*, n. sp.; *Caira*, n. sp.; *Spilasma*, n. sp.; *Mangora*, n. sp.; *Aspidolanius*, n. sp.; SIMON (125).—Upper Amazons; *Lycotenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Rio de Janeiro; *Stenotenus*, n. sp.; *Labdacus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Peru; *Mangora*, n. sp.; *Micrathena*, n. sp.; SIMON (125).—Bolivia; *Polybetes*, n. sp.; SIMON (125); *Ctenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Argentina and Paraguay; 14 n. spp.; SIMON (124).—Paraguay; *Araneus*, n. sp.; *Caira*, n. sp.; *Polybetes*, n. sp.; SIMON (125).—Chili; SIMON (131).

Terra del Fuego; 3 n. spp.; SIMON (132).

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Venezuela; *Geayia* (n. g.), n. sp.; THOR (141).

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Hosts of *Cryptostigmata* (*Sarcoptida*), p. iii, BERLESE, *Sarcoptida* in Acari Myriop. et Scorp. Ital.

On man; *Argas reflexus*; BRANDES (12).

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Hamburg, xiii; *A. crassimanus*, Guzerat, p. 110, *rugosus*, Raipur, C.P.

*hendersoni*, Calcutta, p. 111, Pocock, J. Bombay Soc. xi : n. spp.

*A. burdoi*, in E. Africa, p. 3, KRAEPELIN, Die Skorpione Ost-Afrikas.

*Babycurus gigas*, Tanga, p. 124, KRAEPELIN, Mt. Mus. Hamburg, xiii, n. sp.

*Brachistosternus weigenberghii*, Paraguay, p. 144, fig. 26, KRAEPELIN, t. c.

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*Buthus alticola*, n. var. *buchariensis* and forms, p. 377, *caucasicus* and sub-spp., p. 383, BIRULA, Annuaire Mus. St. Petersb. 1897; *B. hottentotta*, E. Africa, p. 3, KRAEPELIN, Die Skorpione Ost-Afrikas.

*B. fuscus*, Bucharest, p. 388, BIRULA, Annuaire Mus. St. Petersb. 1897; *B. odonturus*, Khelat Frontier, p. 104, *atrostriatus*, Kashmere Bund,

p. 105, *rugiscutis*, Mahableshtar, p. 106, *pachyurus*, Mundla, p. 107,

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*H. tityrus*, p. 136, KRAEPELIN, t. c.

*Heterochactas wittii*, Ecuador, p. 141, figg. 23-25, KRAEPELIN, t. c. n. sp.

*Heterometrus bakhmeti*, Tanganyika, p. 131, figg. 12-14, KRAEPELIN, t. c. n. sp.

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- Hormurus nigripes*, Guzerat, p. 117, Pocock, J. Bombay Soc. xi, n. sp.  
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- Admetinae*, sub-fam. nov. for genera *Admetus*, *Heterophrynus* and *Phrynopsis*, Pocock, p. 358, Ann. Nat. Hist. xix.  
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*Brachythele bicolor*, Durban, p. 735, Pocock, P. Zool. Soc. 1897, n. sp.  
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The following sub-families are recognised by SIMON, p. 22, Araignées, ii:—  
*Ctenine*, *Selenopina*, *Sparassine*, *Clubionine*, *Liocranina*, *Myandrina*, *Micariine*, *Corinnine* but *Clubionine*, *Corinnine* and *Liocranina* are the only three placed under the heading *Clubionidæ* here.

- Aepygnatha ferox*, Carin Cheba, p. 201, THORELL, Ann. Mus. Genova, xvii, n. sp.  
*Agruca*, gen. defined, p. 145, SIMON, Araignées, ii; *A. g.* defined, p. 298, *haglundii*, p. 299, pl. xvii, fig. 10, *brunnea*, p. 300, pl. xvii, figg. 11-11c, *proxima*, p. 302, pl. xvii, figg. 12-12b, *chrysea*, p. 303, pl. xvii, fig. 13, *celans*, p. 304, pl. xvii, fig. 14, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii.  
*A. guttulata*, Turkestan, p. 11, SIMON, Ann. Soc. ent. Belgique, 1897, n. sp.  
*Apostenus*, gen. defined, p. 144, SIMON, Araignées, ii.  
*A. rutilius*, Sierra-Leone, p. 498, SIMON, Ann. Soc. ent. France, lxx, n. sp.  
*Argistes*, n. g. p. 143, for *velox*, p. 144, SIMON, Araignées, ii. n. sp.  
*Argoctenus*, defined, p. 132, SIMON, t. c.  
*Asudipus*, n. g. defined, p. 186, SIMON, t. c.  
*A. muticus*, New Holland, p. 15, SIMON, Ann. Soc. ent. Belgique, 1897, n. sp.  
*Brachyphæa*, defined, p. 186, SIMON, Araignées, ii.  
*Carteronius*, n.g., SIMON, t. c.  
*Centrothele*, g. defined, p. 186, SIMON, t. c.  
*Ceto*, g. defined, p. 185, SIMON, t. c.  
*C. cænosa*, Natal, p. 11, SIMON, Ann. Soc. ent. Belgique, 1897; *C. setosa*, Brazil, martini, E. Africa, p. 509, SIMON, Ann. Soc. ent. France, lxx, n. spp.  
*Chiracanthium*, g. defined, p. 87, SIMON, Araignées ii; *C. g.* defined, p. 283, *punctorum*, p. 284, pl. xvii, figg. 4 & 4a, *erroneum*, p. 286, pl. xvii, figg. 26 & 26a, *erraticum*, p. 287, pl. xvii, figg. 5-5b, *lupidicolens*, p. 289, pl. xvii, figg. 6 & 6a, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii.  
*C. ferum*, Mexico, p. 228, pl. xxix, figg. 8-8e, *debile*, Panama, p. 229, pl. xxix, figg. 7-7c, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer.; *C. clavigerum*, Natal, p. 8, SIMON, Ann. Soc. ent. Belgique, 1897; *C. leucophæum*, Madagascar, p. 502, SIMON, Ann. Soc. ent. France, lxx, n. spp.  
*Clubiona*, g. defined, p. 85, SIMON, Araignées ii, g. defined, p. 266, *phragmites*, p. 266, pl. xvi, figg. 16-16c, *germanica*, p. 268, pl. xvi, fig. 17, *terrestris*, p. 269, pl. xvi, figg. 15 & 15a, *lutescens*, p. 270, pl. xvi, fig. 18, *neglecta*, p. 272, pl. xvi, figg. 19-19b, *cærulescens*, p. 273, pl. xvi, figg. 20-20b, *pallidula*, p. 274, pl. xvi, figg. 21-21d, *reclusa*,



- p. 276, pl. xvi, figg. 22-22c, *corticalis*, p. 277, pl. xvi, figg. 23 & 23a, *brevipes*, p. 279, pl. xvi, figg. 24-24b, *diversa*, p. 280, pl. xvii, figg. 1 & 1a, *subtilis*, p. 281, pl. xvii, figg. 3-3b, *compta*, p. 282, pl. xvii, figg. 2 & 2a, described, BECKER, Arach. de Belgique iii, in Ann. Mus. Belgique, xii; *C. distincta*, p. 249, THORELL, Ann. Mus. Genova, xvii.
- C. crocata*, Mexico, p. 168, pl. xxi, figg. 2-3b, *attigua*, Mexico, pl. xxi, figg. 1-1e, p. 169, *placens*, Panama, p. 195, *simplex*, Guatemala, p. 196, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer.; *C. limpida*, *natalica*, *helva*, p. 9, *valens*, p. 10, Natal, *biaculeata*, *cupensis*, Port Elizabeth, p. 10, SIMON, Ann. Soc. ent. Belgique, 1897; *C. esuriens*, Carin Cheba, p. 249, *pupula*, Bhamo, p. 251, THORELL, Ann. Mus. Genova, xvii, n. spp.
- Clubionae*, sub-div. of *Clubioninae*, characterised, p. 74, SIMON, Araignées, ii.
- Clubioninae*, natural history, p. 73, SIMON, *t. c.*
- Corinna lacertosa*, *pallidogutta*, p. 885, *subsignata*, *tomentosa*, p. 886, *punicea*, *consobrina*, p. 887, *napaea*, p. 888, St. Vincent, SIMON, P. Zool. Soc. London, 1897; *C. stigmatica*, Colonia Risso, p. 8, SIMON, Boll. Mus. Torino, xii, No. 270; n. spp.
- Corinnæ*, sub-div. of *Corinninae*, described, p. 190, SIMON, Araignées, ii.
- Corinninae*, sub-fam. of *Clubionidae*, described, p. 177, SIMON, *t. c.*
- Corinnomma harmandii*, p. 239, THORELL, Ann. Mus. Genova, xvii.
- Creugas gulosus*, Palon, p. 243, THORELL, *t. c.*
- Ctenomma*, gen. defined, p. 135, SIMON, Araignées, ii.
- Delozeugma mordax*, Mexico, p. 182; *D. mordicans*, Guatemala, p. 225, pl. xxviii, figg. 1-1g, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer. n. spp.
- D. depictum*, pl. xix, figg. 1-1d, CAMBRIDGE, O. P., *t. c.*
- Eutichurus*, n. g., p. 88, SIMON, Araignées, ii.
- E. luridus*, Le Para, *ravidus*, Brazil, p. 501, *ferox*, Ecuador, p. 502, SIMON, Ann. Soc. ent. France, lxx, n. sp.
- Eutitha rupicola*, Yado, p. 253, THORELL, Ann. Mus. Genova, xvii, n. sp.
- Gazenna*, defined, p. 99, SIMON, Araignées, ii.
- Gytha*, defined, p. 146, SIMON, *t. c.*
- Hilke*, defined, p. 146, SIMON, *t. c.*
- Jacæna*, n. g., p. 230, for *distincta*, Tenasserim, p. 231, THORELL, Ann. Mus. Genova, xvii, n. sp.
- Lauricius*, g. defined, p. 86, SIMON, Araignées, ii.
- Liocranæ*, sub-div. of *Liocraninae*, p. 136, SIMON, *t. c.*
- Liocraninae*, sub-family of *Clubionidae*, defined, p. 124, SIMON, *t. c.*
- Liocranoides*, gen. defined, p. 145, SIMON, *t. c.*
- Liocranum*, gen. defined, p. 142, SIMON, *t. c.*; *L. g.* defined, p. 296, *rupicola*, p. 297, pl. xvii, fig. 9, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii.
- L. mirabile*, Mexico, p. 214, pl. xxvi, figg. 8-9a, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer., n. sp.
- Maceria*, n. g., p. 88, SIMON, Araignées, ii.
- Mardonio*, n. g., p. 246, for *fasciata*, Palon, p. 247, THORELL, Ann. Mus. Genova, xvii, n. sp.
- Matidia*, defined, p. 87, SIMON, Araignées, ii.
- M. luzonica*, Luzon Is., *aeria*, Jolo Is., *javana*, Java, *flagellifera*, p. 503, *bimaculata*, *simplex*, p. 504, Taprobane Is., SIMON, Ann. Soc. ent. France, lxx, n. spp.
- Mesiotelus*, n. g., p. 143, SIMON, Araignées, ii.
- Mesobria*, n. g., for *guttata*, St. Vincent, p. 882, SIMON, P. Zool. Soc. London, 1897, n. sp.
- Micariosoma*, gen. defined, p. 151, SIMON, Araignées, ii.
- Micariosomatae*, sub-div. of *Liocraninae* described, p. 146, SIMON, *t. c.*
- Miturga*, defined, p. 130, SIMON, *t. c.*

- Miturgeæ*, sub-div. of *Liocranina*, defined, p. 126, SIMON, *t. c.*  
*Myrmeciscu birmanica*, Charin Cheba, p. 240, THORELL, Ann. Mus. Genova, xvii, n. sp.  
*Nicodamus dimidiatus*, New Holland, p. 15, SIMON, Ann. Soc. ent. Belgique, 1897, n. sp.  
*Oedignatha*, g. defined, p. 190, SIMON, Araignées, ii; *Oe. scrobiculata*, Penang Is., p. 14, SIMON, Ann. Soc. ent. Belgique, 1897.  
*Oe. gulosa*, *affinis*, *retusa*, Taprobane Is., p. 12, *striata*, Taprobane Is., *decorata*, Manila, p. 13, *coriacea*, *flavipes*, *montigena*, Taprobane Is., p. 14, SIMON, Ann. Soc. ent. Belgique, 1897; *Oe. procerula*, ♂, Dehra-Dun, p. 261, SIMON, Mem. Soc. zool. France, x; *Oe. bucculenta*, Charin Cheba, p. 197, *rugulosa*, Chiala, p. 199, THORELL, Ann. Mus. Genova, xvii : n. spp.  
*Oedignathæ*, sub-div. of *Corinnina* described, p. 187, SIMON, Araignées, ii.  
*Orthobula*, n. g. defined, p. 152, SIMON, *t. c.*  
*O. impressa*, Colombo, p. 498, *calceata*, Sierra-Leone, *radiata*, Transvaal, p. 499, SIMON, Ann. Soc. ent. France, lxxv, n. spp.  
*Otiacilia*, n. g., p. 243 for *armatissima*, Mts. of Cheba, p. 244, THORELL, Ann. Mus. Genova, xvii, n. sp.  
*Paratyte*, n. g., defined, p. 145, SIMON, Araignées, ii.  
*Philisca*, g. defined, p. 86, SIMON, *t. c.*  
*Prochora*, defined, p. 131, SIMON, *t. c.*  
*Pronophea*, n. g., p. 186, SIMON, *t. c.*; *P. natalica*, Natal, p. 15, SIMON, Ann. Soc. ent. Belgique, 1897, n. sp.  
*Radulphius*, defined, p. 131, SIMON, Araignées, ii.  
*Rhæoctenis*, n. g., defined for *equestris*, n. sp., p. 143, SIMON, *t. c.*  
*Scotina*, defined, p. 144, SIMON, *t. c.*  
*Sesieutes*, n. g., p. 153, SIMON, *t. c.*; *S. lucens*, Singapore, p. 500, SIMON, Ann. Soc. ent. France, lxxv, n. sp.  
*Simalio*, n. g., defined, p. 86, SIMON, Araignées, ii.  
*Sphingius scutatus*, Taprobane, p. 15, SIMON, Ann. Soc. ent. Belgique, 1897; *S. scrobiculatus*, Palon, p. 236, THORELL, Ann. Mus. Genova, xvii, n. spp.  
*Strotarchus*, defined, p. 89, SIMON, Araignées, ii.  
*Syrisca*, defined, p. 131, SIMON, *t. c.*; *S. mæsta*, Brazil, p. 500, *cervina*, Luzon, p. 500, SIMON, Ann. Soc. ent. France, lxxv, n. spp.  
*Syspira*, defined, p. 131, SIMON, Araignées, ii.  
*Systaria*, n. g., p. 87, SIMON, *t. c.*  
*Teutamus*, defined, p. 152, SIMON, *t. c.*  
*Thamphilus vivax*, Moulmein, p. 233, THORELL, Ann. Mus. Genova, xvii, n. sp.  
*Tomopisthes chazalia*, Sierra Nevada, p. 11, SIMON, Ann. Soc. ent. France, 1897, n. sp.  
*Tolophus*, defined, p. 89, SIMON, Araignées, ii.  
*Trachelas*, defined, p. 184, SIMON, *t. c.*  
*T. femoralis*, St. Vincent, p. 883, SIMON, P. Zool. Soc. London, 1897, n. sp.  
*Tracheleæ*, sub-div. of *Corinnina*, p. 178, SIMON, Araignées, ii.  
*Trachelopachys*, n. g., p. 185, SIMON, *t. c.*  
*Tyrrhus ambiguus*, Chiala, p. 238, THORELL, Ann. Mus. Genova, xvii, n. sp.  
*Vulsoor*, defined, p. 132, SIMON, Araignées, ii.  
*Zora*, defined, p. 135, SIMON, *t. c.*  
*Zoreæ*, sub-div. of *Liocranina*, described, p. 133, SIMON, *t. c.*

## CTENIDÆ.

- Ctenina*, sub-family of *Clubionida*, described, p. 104, SIMON, Araignées, ii.  
*Acanthæ*, sub-div. of *Ctenina*, described, p. 115, SIMON, *t. c.*  
*Caloctenæ*, sub-div. of *Ctenina*, described, p. 119, SIMON, *t. c.*  
*Ctenæ*, sub-div. of *Ctenina*, described, p. 106, SIMON, *t. c.*

- Acantheis*, genus defined, p. 118, SIMON, Araignées, ii, diagnosis of male, p. 340, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xx.
- A. tridens*, Borneo, p. 611, Pocock, Abh. Senckenb. Ges. xxiii; *A. longiventris*, Singapore, p. 495, SIMON, Ann. Soc. ent. France, lxv, n. spp.
- Anahitu*, defined, p. 123, SIMON, Araignées, ii.
- A. nigritarsis*, Hauacio, p. 175, PAVESI, Ann. Mus. Genova, xviii; *A. lineata*, Congo, *lurida*, Sierra Leone, p. 497, SIMON, Ann. Soc. ent. France, lxv, n. spp.
- Asthenoctenus*, n. g., p. 113, SIMON, Araignées, ii; *A. borellii*, San Pablo, p. 7, SIMON, Boll. Mus. Torino, xii, No. 270, n. sp.
- Caloctenus*, defined, p. 123, SIMON, Araignées, ii.
- C. guineensis*, W. Africa, *celer*, Java, *gracilitarsis*, Venezuela, p. 496, SIMON, Ann. Soc. ent. France, lxv; *C. luteovittatus*, p. 880, *penicilliger*, p. 881, St Vincent, SIMON, P. Zool. Soc. London, 1897, n. spp.
- Celatycheus*, n. g., p. 114, SIMON, Araignées, ii.
- Ctenus*, defined, p. 114, SIMON, Araignées, ii, Generic type, p. 57, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xix, table of Species, p. 73, CAMBRIDGE, t. c., *keyserlingii*, n. n. for *C. ferus*, p. 81, pl. iii, fig. iia, *medius*, measurements of female, p. 81, pl. iii, fig. viig, Male, p. 87, *nigriventer*, distinguished from *C. keyserlingii* & *boliviensis*, p. 81, pl. iii, figg. iid, *Pertyi*, n. n. for *C. rufibarbis*, p. 81, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xix; *C. argentipes*, Sumatra, male described, p. 336, *barbatus*, Burmah, young female described, p. 337, *bicostatus*, female described, p. 334, *fungifer*, Penang, female described, p. 334, *obscurus*, Burmah, female described, p. 334, *pollii*, Sumatra, male described, p. 336, *pulvinatus*, Borneo, female described, p. 335; *ramosus*, Burmah, male described, p. 332, *trabifer*, Burmah, species discussed, p. 332, *trabifer*, Ceylon, p. 335, pl. ii, fig. 13, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xx.
- C. serratipes*, Demerara, p. 87, pl. iii, figg. vic-viia, *boliviensis*, Bolivia, p. 80, pl. iii, fig. iii, iv, *minimus*, N. America, p. 86, pl. iii, figg. v, 1, 2, *sinuatus*, Costa Rica, p. 84, pl. iii, figg. ib, iva, vie, viif, *rectipes*, Brazil, p. 85, pl. iii, figg. via, viib, *spiculus*, Colombia, p. 86, pl. iii, fig. viih, *reidyi*, Santarem, p. 78, pl. iii, figg. ia, iia, *planipes*, Santarem, p. 84, pl. iii, figg. vib, viic; *similis*, Santarem, p. 83, pl. iii, figg. ic, iva; *minor*, Santarem, p. 83, pl. iii, fig. ivc, *albofasciatus*, Santarem, p. 82, pl. iii, figg. id, ivb, *andrewsi*, Santarem, female, p. 79, pl. iii, fig. iib, *nigritus*, Santarem, p. 81, pl. iii, figg. via, viia, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xix; *C. ceylonensis*, Ceylon, p. 346, pl. iv, figg. 12 & 26, *hosei*, Borneo, p. 345, pl. iv, figg. 11, 17, 20, 28-30, *sarawakensis*, Borneo, p. 346, pl. iv, fig. 3, *thorellii*, Ceylon, p. 342, pl. iv, figg. 2, 15, 27, *philippinensis*, Luzon, p. 349, pl. iv, fig. 1, *floweri*, Penang, p. 348, pl. iv, figg. 22-25, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xx; *C. hosei*, Sarawak, p. 608, pl. xxv, figg. 14-14b, *celebensis*, Celebes, p. 609, pl. xxv, fig. 16, *kuekenethali*, Celebes, p. 609, pl. xxv, fig. 15, *javanus*, Java, p. 610, pl. xxv, fig. 16 (?), Pocock, Abh. Senckenb. Ges. xxiii; *C. smythiesi*, ♀, Dehra-Dun, p. 260, SIMON, Mem. Soc. Zool. France, x; *C. unilobatus*, St. Vincent, p. 880, SIMON, P. Zool. Soc. London, 1897: n. spp.
- Enoploctenus*, n. g., p. 117, SIMON, Araignées, ii; *E. germaini*, Brazil, p. 496, SIMON, Ann. Soc. ent. France, lxv, n. sp.
- Leptoctenus*, genus discussed, p. 337, *denticulatus*, Sim. = *Ctenus denticulatus*, Thor. described, p. 338, pl. iv, figg. 4-9, *tumidulus*, Burmah, young male described and value of species criticised, p. 339, *valvularis*, Sumatra, female described, p. 338, pl. iv, fig. 16, CAMBRIDGE, F. O. P., Ann. Nat. Hist. xx.
- L. modestus*, Zanzibar, p. 492, *pulchriiventris*, S. Africa, *lycosinus*, W. Africa, p. 493, *aculeatus*, W. Africa, *kochi*, New Guinea, p. 494, SIMON, Ann. Soc. ent. France, lxv, n. spp.

- Neoctenus*, n. g., p. 123, for *comosus*, p. 124, SIMON, Araignées, ii, n. sp.  
*Odo*, defined, p. 123, SIMON, ii, t. c.  
*O. agilis*, Antilles, p. 498, SIMON, Ann. Soc. ent. France, lxx, n. sp.  
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*Phymatoctenus comosus*, Brazil, p. 495, SIMON, Ann. Soc. ent. France, lxx, n. sp.  
*Tuticanus*, n. g., defined, p. 114, SIMON, Araignées, ii; *T. cruciatus*, Ecuador, p. 495, SIMON, Ann. Soc. ent. France, lxx, n. sp.  
*Thasyræa*, defined, p. 124, SIMON, Araignées, ii.  
*Titiotus*, n. g., p. 113, SIMON, t. c.  
*Uliodon*, defined, p. 112, SIMON, t. c.

## DINOPIDÆ.

- Dinopis kollari*, Paloni, p. 265, THORELL, Ann. Mus. Genova, xvii.

## DRASSIDÆ.

- Cf. BECKER (5), p. 236, pt. 3.  
*Anagraphis vitellina*, Nazareth, *pluridentata*, Syria, p. 464, SIMON, Ann. Soc. ent. France, lxx, n. spp.  
*Aphantaulax indus*, Kurrachee, p. 291, SIMON, Bull. Mus. Paris, 1897; *A. univittatus*, Mts. of Carin Cheba, p. 222, THORELL, Ann. Mus. Genova, xvii, n. spp.  
*Callilepis seduba*, ♀, Dehra-Dun, p. 255, SIMON, Mem. Soc. zool. France, x, n. sp.  
*Cragus*, n. g. for *C. pallidus*, Guatemala, p. 215, pl. xxvi, figg. 10–10f, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer. n. sp.  
*Drassus*, g. defined, p. 252, *lapidosus*, p. 253, pl. xvi, figg. 10–10b, *pubescens*, p. 254, pl. xvi, figg. 11 & 11a, *infuscatus*, p. 256, pl. xvi, figg. 12–12b, *trogodytes*, p. 257, pl. xvi, figg. 13–13c, *blackwalli*, p. 259, pl. xvi, figg. 26 & 26a, described, BECKER, Arach. de Belgique, ii, in Ann. Mus. Belgique, xii.  
*D. ghecuanus*, Mts of Carin Ghecu, p. 210, *orinus*, Tenasserim, p. 212, *chebanus*, Carin Cheba, p. 214, *plapensis*, Tenasserim, p. 216, *aphanes*, Palou, p. 218, *manducator*, Mts of Carin Ghecu, p. 220, THORELL, Ann. Mus. Genova, xvii, n. spp.  
*Drassodes cerinus*, ♀, N. Guzerath, p. 254, SIMON, Mem. Soc. zool. France, x; *D. maindroni*, Muscat, p. 98, SIMON, Bull. Mus. Paris, 1897, *insidiator*, Yado, p. 205, THORELL, Ann. Mus. Genova, xvii, n. spp.  
*Echemus spinibarbis*, Muscat, p. 97, SIMON, Bull. Mus. Paris, 1897; *E. smythiesi*, ♀, Dehra-Dun, p. 255, SIMON, Mem. Soc. zool. France, x; *E. chialanus*, Chiala, p. 209, THORELL, Ann. Mus. Genova, xvii, n. spp.  
*Gnaphosa*, defined; *G. lucifuga*, p. 262, pl. xvii, fig. 24, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii; *G. kulczynskii*, p. 343, DAMIN, Glasnik Naravosl druzt. 1896, n. sp.  
*Helvidius*, n. g., p. 220, for *H. lugubris*, n. sp., p. 221, pl. xxvii, figg. 1–1e, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer. n. sp.  
*Melanophora univittata*, Kurrachee, p. 291, *hospita*, Kurrachee, p. 292, SIMON, Bull. Mus. Paris, 1897, n. spp.  
*Micythus*, n. g., p. 223, for *pictus*, n. sp., Rangoon, p. 224, THORELL, Ann. Mus. Genova, xvii.  
*Mulcymnis subtilis*, Muscat, p. 97, SIMON, Bull. Mus. Paris, 1897, n. sp.  
*Palicanus*, n. g., p. 226, for *caudatus*, Rangoon, p. 227, THORELL, Ann. Mus. Genova, xvii, n. sp.

- Pedo*, n. g., p. 219, for *P. ornatus*, Mexico, p. 220, pl. xxvi, figg. 14-14e, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer. n. sp.
- Pelayo*, n. g. for *latus*, Costa Rica, p. 194, pl. xxiv, figg. 7-7f, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer. ii. sp.
- Pacilochroa*, g. defined, p. 260, *conspicua*, p. 261, pl. xvi, fig. 14, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii.
- Prosthesima*, g. defined, p. 241, *pedestris*, p. 242, pl. xvi, figg. 3 & 3a, *subterranea*, p. 243, pl. xvi, figg. 4-4e, *petrensis*, p. 245, pl. xvi, figg. 5 & 5a, *latreillei*, p. 246, pl. xvi, figg. 6 & 6a, *scrotina*, p. 247, pl. xvi, fig. 7, *longipes*, p. 248, pl. xvi, fig. 8, *lutetiana*, p. 249, pl. xvi, fig. 9, *pusilla*, p. 251, pl. xvi, figg. 25 & 25a, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii.
- Pythonissa*, g. defined, p. 263, *nocturna*, p. 264, described, BECKER, t. c.
- Talanites cavernicola*, Moulmein, p. 207, THORELL, Ann. Mus. Genova, xvii, n. sp.
- Teudis*, n. g. for *Dolozzeugma mordax* Camb. p. 199, pl. xxii, figg. 11-11f. *T. gentilis*, p. 199, pl. xxv, figg. 6-6f, CAMBRIDGE, O. P. Arach. Aran. i, in Biol. Centr. Amer. n. sp.
- Zora*, g. defined, *spinimana*, p. 306, pl. xvii, figg. 15-15b, *nemoralis*, p. 308, pl. xvii, figg. 17 & 17a, described, BECKER, Arach. de Belgique, iii, in Ann. Mus. Belgique, xii.

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- Cf. Becker (5), pt. 3, p. 309.
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## XII. MYRIOPODA AND PROTO- TRACHEATA.

BY

ALBERT WILLIAM BROWN, B.A., F.L.S.

*Christ Church, Oxford.*

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### INTRODUCTION.

THERE is little for the Recorder to say by way of introduction this year. The Record is considerably larger than that of 1896, but the increase in the number of titles is entirely due to the inclusion of a number of short papers bearing on the question, "Are the *Arthropoda* a natural group?" [See BIOLOGY.] The Recorder has endeavoured to make the section Distribution more exhaustive, and this, in addition to the greater number of species described, has helped to lengthen out the later part.

As in 1896, so now, the bulk of the literature is contributed by a few investigators, and is almost entirely occupied with specific and faunistic lists. The *Diplopoda* claim by far the greater attention, whilst the *Paupoda* once more pass unnoticed.

Taking the papers dealing with the Biology of the group, attention must be first drawn to HEYMONS'S (30) article on the segmentation and structure



of the Myriopodan body, and to his other discussion of the abdominal appendages (29). COOK's "Brandtia" contains, amongst others, two interesting short papers, one on a spinning Diplopod (21), and the other on the larvæ of *Stemmatorius* (23). DUBOSCQ deals with the vessels of *Scolopendridæ* (26), and CUÉNOT incidentally with the lymphatic organs and corpuscles of *Myriopoda* (25). NEMEC has described the structure of the Diplopodan eye (42), and WILLEM the coxal glands of *Lithobius* (65).

Nothing dealing with the embryology of the group has been published during the year, save a short paragraph on egg-cleavage by CLAYPOLE (13).

JANET (32) gives a list of *Myriopoda* commensal with Ants, and LÉGER (40) has described some new *Coccidia* from the digestive canal of *Myriopoda*.

SILVESTRI (51) has revised, with additions, the classification of the *Diplopoda* published last year in "I Diplopodi." The revision takes the form of a list of Orders, Tribes, and Families, and should be consulted in connection with the work mentioned.

In the course of his systematic papers, VERHOEFF deals incidentally with several points, amongst which may be mentioned the morphology of the abdominal appendages (58), the comparative morphology of the first pair of legs of *Julidæ* (57), the comparative morphology and physiology of the copulatory apparatus of *Heteroparatia* (61), the copulation feet of *Brachydesmus* (60), and the vulva of *Lysiopetalidæ* (60).

BRÖLEMANN (8) gives an account of the structure and systematic position of the peculiar Myriopod, *Scolopendropsis bahiensis*.

To give a list of the systematic papers would obviously be out of place here, but a few of the more important may be mentioned. BRÖLEMANN has enriched our knowledge of the *Myriopoda* of Algeria (7) and France (10). SILVESTRI has described a great number of new species and genera from Sicily (53), Mexico (48), Ecuador (49), Argentina (48), and Somaliland (50), and some miscellaneous collections (52 & 54). Pocock (45) has published a valuable contribution to the literature of Oriental and Australian *Platyrrhachidæ*. Lastly, VERHOEFF continues his series of papers on Palearctic *Myriopoda* (51, & 59-64).

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## III. DISTRIBUTION.

*Palaearctic Region.*

Europe: *Chordeumidæ*; VERHOEFF (59).—Belgium: LAMEERE (37).—France: n. sp. of *Julus*; BRÖLEMANN (10).—Banyuls: n. sp. of *Schizophyllum*; n. sp. of *Julus*; BRÖLEMANN (10).—Nabrigas: n. sp. of *Lithobius*; BRÖLEMANN (10).—Paris: n. sp. of *Julus*; BRÖLEMANN (10).—Sannois: n. sp. of *Lithobius*; BRÖLEMANN (10).—Savoy: n. sp. of *Julus*; BRÖLEMANN (10).—Pyrenees: n. sp. of *Glomeridella*; 2 n. spp. *Julus*; n. sp. of *Micropodiulus*; n. sp. *Lithobius*; BRÖLEMANN (10).—Alps (Maritime): n. sp. *Julus*; BRÖLEMANN (10).—Pedro Acu: n. g. of *Strongylosomatidæ*; SILVESTRI (52).—Rhenish Prussia: *Diplopoda*; VERHOEFF (62).—Bex, Switzerland: *Myriopoda*; BRÖLEMANN (9).—Bohemia: 2 n. spp. *Julus*; NĚMEC (43).—Siebenbürgen: *Myriopoda*; KIMAKOWICZ (35).—*Diplopoda*; VERHOEFF (57).—Bosnia: *Polydesmidæ*, *Chordeumidæ*, *Lysiopetalidæ*; VERHOEFF (60).—Herzegovina: *Polydesmidæ*, *Chordeumidæ*, *Lysiopetalidæ*; VERHOEFF (60).—Roumania: *Myriopoda*; VERHOEFF (64).—Dalmatia: *Polydesmidæ*, *Chordeumidæ*, *Lysiopetalidæ*; VERHOEFF (60).—Sicily: *Myriopoda*, 5 n. g. and 9 n. spp.; SILVESTRI (53).

Algeria: *Juloidæ*, 5 spp. and 2 n. spp. of *Julus*; BRÖLEMANN (7).

*Ethiopian Region.*

Africa: 18 n. spp. *Oxydesmidae*; COOK (18): 5 n. spp. *Diplopoda*, 1 n. g.; SILVESTRI (54).—Abyssinia: n. sp. of *Odontopyge*; SILVESTRI (52).—Somaliland: *Myriopoda*, 7 n. spp.; SILVESTRI (50).—E. Africa: *Myriopoda*, 10 n. spp.; ATTEMS (3): n. g. of *Oryidae*; COOK (19).—Transvaal: n. sp. of *Odontopyge*; SILVESTRI (52).—British S. Africa: *Myriopoda*; POCOCK in JOHNSON (34).—W. Africa: *Geophiloidea*; COOK (20).—Congo: n. sp. of *Archispirostreptus*; SILVESTRI (52).—Cameroons: n. g. of *Oryidae*; COOK (19): 2 n. g. of *Xyodesmidae*, n. fam.; COOK (17).

*Oriental and Australasian Regions.*

India: 2 n. spp. of *Arthrosphæra*; SILVESTRI (52): n. g. of *Strongylosomatidae*; SILVESTRI (52).—Malay Peninsula: n. sp. of *Acanthodesmus*; POCOCK (45).—Singapore: n. sp. of *Acanthodesmus*, n. sp. of *Phractodesmus*; POCOCK (45).—Pinang: n. sp. of *Acanthodesmus*; POCOCK (45).—Perak: n. sp. of *Acanthodesmus*; POCOCK (45).

Malay Archipelago: *Platyrrhachidae*, 3 n. spp.; COOK (14): 43 n. spp. and 4 n. gg. *Diplopoda*; SILVESTRI (54).—Java: 1 n. sp. *Spirostreptus*; ATTEMS (2): 3 n. spp. *Ophrydesmus*, n. g. of *Pterodesmidae*; COOK (18): 2 n. spp. of *Doratodesmus*; COOK (18): n. sp. of *Ophrydesmus*, n. g. of *Pterodesmidae*; COOK (18).—Borneo: 1 n. sp. of *Rhinocricus*, 4 n. spp. of *Trigoniulus*, 4 n. spp. of *Spirostreptus*, 3 n. spp. of *Platyrrhachus*, 2 n. spp. of *Strongylosoma*, 1 n. sp. of *Zephronia*; ATTEMS (2): 4 n. spp. of *Phyodesmus*, 3 n. spp. of *Stenoniodes*, n. g., 3 n. spp. of *Eurydirorhachis*, n. g., 2 n. spp. of *Hoplurorhachis*, n. g.; POCOCK (45).—Batjan: 1 n. sp. of *Rhinocricus*, 2 n. spp. of *Trigoniulus*, 1 n. sp. of *Platyrrhachus*; ATTEMS (2).—Soah Konorah: 1 n. sp. of *Strongylosoma*; ATTEMS (2).—Halma-hera: 5 n. spp. of *Rhinocricus*, 3 n. spp. of *Trigoniulus*, 4 n. spp. of *Platyrrhachus*, 1 n. sp. of *Zephronia*, 1 n. sp. of *Otocryptops*, 1 n. sp. of *Heterostoma*, 1 n. sp. of *Geophagus* (*Geophilidae*), n. g.; ATTEMS (2).—Luzon Is.: n. sp. of *Ilodesmus*; POCOCK (45).—Palawan Is.: n. sp. of *Polydesmorhachis*, n. g.; POCOCK (45).—Celebes: 2 n. spp. of *Rhinocricus*, 1 n. sp. of *Trigoniulus*, 2 n. spp. of *Platyrrhachus*, 1 n. sp. of *Strongylosoma*, 1 n. sp. of *Zephronia*, 1 n. sp. of *Glomeris*; ATTEMS (2): n. sp. of *Taphodesmus*; POCOCK (45).

Sibutu Is.: n. sp. of *Stenoniodes*, n. g.; POCOCK (45).—New Guinea; 2 n. spp. of *Eutrachyrhachis*; POCOCK (45).

Solomon Is.: 2 n. spp. of *Diodontodesmus*, n. g., n. sp. of *Paradesmorhachis*, n. g.; POCOCK (45).

Sydney: n. sp. of *Geophilus*; SILVESTRI (52).

*Nearctic Region.*

America: n. g. of *Glomeroidea*; COOK (22).—Florida: n. sp. of *Psochodesmus*; COOK (18).

*Neotropical Region.*

Mexico: n. family of *Polydesmoidea*; SILVESTRI (47).—Porto Rico: n. g. of *Chytodesmidae*, n. fam.; COOK (18).—Santa Lucia: n. g. of *Platyrrhachidae*; COOK (24).—S. America: n. g. of *Pterodesmidae*; COOK (18): 5 n. spp. of *Diplopoda*; SILVESTRI (54).—Guiana: n. g. of *Platyrrhachidae*; COOK (24).—Cayenna: n. sp. of *Pseudonannolens*, n. sp. of *Trigoniulus*, n. sp. of *Rhinocricus*, 2 n. spp. of *Orthoporus*, n. sp. of *Archispirostreptus*; SILVESTRI (52).—Venezuela: n. sp. of *Geophilus*; SILVESTRI (52).—

Colombia: n. g. of *Platyrrhachidæ*; COOK (24): n. sp. of *Nannolens*; SILVESTRI (52).—Bogota: n. g. of *Chytodesmidæ*, n. fam.; COOK (18): n. g. of *Xyodesmidæ*, n. fam.; COOK (17).—Ecuador: n. g. of *Platyrrhachidæ*; COOK (24): *Myriopoda*, 4 n. g., 25 n. spp.; SILVESTRI (49).—Brazil: n. g. of *Oryidæ*; COOK (19): n. sp. of *Nannophilus*, n. sp. of *Archispirostreptus*, n. sp. of *Rhinocricus*; SILVESTRI (52).—Pernambuco: n. sp. of *Catharodesmus*, n. sp. of *Rhinocricus*; SILVESTRI (52).—Bolivia: *Myriopoda*, 10 n. spp.; SILVESTRI (48).—Argentina: *Myriopoda*, 5 n. spp.; SILVESTRI (48).—Straits of Magellan: *Schendyla*, 1 n. sp., *Scolioplanes*, 1 n. sp.; ATTEMS (4).

## IV. SYSTEMATIC.\*

## CHILOPODA.

## LITHOBIIDÆ.

- Henicops inermipes*, S. Lorenzo, Argentina, p. 2, SILVESTRI, Boll. Mus. Torino, xii, No. 283, n. sp.  
*Lithobius* (*Archilothobius*) *cryptobius*, Messina, p. 7, SILVESTRI, Bull. Soc. ent. Ital. xxix; *L. martini*, Nabrigas, p. 115, *dubosqui*, Sannois, p. 116, BRÖLEMANN, Feuille Natural. xxvi; *L. bostryx*, Ahusquy, p. 29, BRÖLEMANN, op. cit. xxviii: n. spp.  
*L. nudicornis*, p. 4, *borealis*, *infossus*, *pusillus*, p. 6, *castaneus*, *crassipes*, p. 7, Sicily; SILVESTRI, Bull. Soc. ent. Ital. xxix.

## SCOLOPENDRIDÆ.

- Bothriogaster egyptiacus*, Cairo, p. 25, ATTEMS, Mt. Mus. Hamburg, xiii, n. sp.  
*Cryptops bottegii*, Fra Matagoi e Lugh, p. 302, SILVESTRI, Ann. Mus. Genova, xvii, n. sp.  
*Heterostoma venenosum*, Halmahera, p. 478, ATTEMS, Abh. Senckenb. Ges. xxiii, n. sp.  
*Otocryptops aculeata*, Halmahera, p. 478, pl. xxi, fig. 5, ATTEMS, t. c. n. sp.  
*Scolioplanes magellanicus*, p. 4, figg. 1-4, ATTEMS, Ergebnisse der Hamburger Magalhaensischen Sammelreise, 2<sup>te</sup> Lief, n. sp.  
*Scolopendra cingulata* è *ovipara*, p. 56; SILVESTRI, Rend. Acc. Lincei, vi.  
*Scolopendropsis bahiensis*, Bahia, described, p. 142; BRÖLEMANN, Bull. Soc. zool. France, xxii.

## HIMENTARIIDÆ.

- Meinertophilus*, n. g. for *Himantarium superbum*, p. 9; SILVESTRI, Bull. Soc. ent. Ital. xxix.

## GEOPHILIDÆ.

- Synopsis of families of genera of *Geophiloidea*, p. 35; COOK, Brandtia.  
*Ballophilus clavicornis*, *maculosus*, Togo, p. 37; COOK, t. c.  
*Otenophilus africanus*, Togo, p. 37, *edentulus*, Kamerun, p. 38; COOK, t. c.  
*C. paurodus*, *simplex*, Togo, p. 38, COOK, t. c., n. spp.

\* In the following list where the character of the reference is not indicated it is to be understood as referring to either description or distribution or both.

- Ctenorya*, n. g. for *jombene*, Jombene Range, S. Africa, p. 34, COOK, *t. c.*, n. sp.  
*Geophagus*, n. g., p. 475, for *G. serangodes*, Halmahera, p. 476, pl. xxi, figg. 1-4, ATTEMS, Abh. Senckenb. Ges. xxiii, n. sp.  
*Geophilus duponti*, Sydney, p. 345, *venezuelae*, Venezuela, p. 346, SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. spp.  
*Henioria*, n. g. for *longissima*, Brazil, p. 34, COOK, Brandtia, n. sp.  
*Lamnonyx leonensis*, Sierra Leone, p. 39, *guineensis*, Sao Thome Is., *punctifrons*, Kamerun, p. 40; COOK, *t. c.*  
*L. togensis*, Togo, p. 39, COOK, *t. c.*, n. sp.  
*Nannophilus bolivianus*, Caiza, Bolivia, p. 2; SILVESTRI, Boll. Mus. Torino, xii, No. 283. *N. brasiliensis*, Brazil, p. 346; SILVESTRI, Ann. Soc. ent. Belgique, 1897 : n. spp.  
*Orphnæus phosphoreus*, Togo Colony, p. 37; COOK, Brandtia.  
*Polycricus æquatorialis*, Valle del Santiago, p. 2, fig. 1; SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.  
*Ptenorya*, n. g. for *afra*, Kamerun, p. 34; COOK, Brandtia, n. sp.  
*Schizotenia prognatha*, Liberia, *quadrissulcata*, *unguiculata*, p. 38, *æqualis*, *porosa*, Kamerun, p. 39; COOK, *t. c.*  
*S. suppar*, Mishoehe, *vara*, Africa, p. 39; COOK, *t. c.*, n. spp.  
*Schendyla mediterranea*, Sicily, p. 11, figg. 1 & 2; SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.  
*Schendyloides*, new subgen. of *Schendyla* for *psilopus*, p. 7; ATTEMS, Ergebnisse der Hamburger Magalhaensischen Sammelreise, 2<sup>te</sup> Lief, n. sp.  
*Tretechthus*, n. generic name for *Geophilus uliginosus* (Porat), p. 39; COOK, Brandtia.

## DIPLOPODA.

See SILVESTRI (51).

Key-tables to Diplopoda of Rheinland, p. 206; VERHOEFF (62).

## PSELAPHOGNATHA.

### POLYXENIDÆ.

- Polyxenus lagurus*, in Rhenish Prussia, p. 245; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.

## CHILOGNATHA.

### ONISCOMORPHA.

### GLOMERIDELLIDÆ.

Family defined, p. 48; COOK, Brandtia.

- Glomeridella vasconica*, Ahusquy, Lower Pyrennees, p. 89, figg. xii & xiii; BRÖLEMANN, Feuille Natural. xxvii, n. sp.

### ONOMERIDIDÆ, n. fam.

Family defined, p. 45; COOK, Brandtia.

- Onomeria*, n. g. for *underwoodii*, America, p. 44; COOK, *t. c.*, n. sp.



### GLOMERIDÆ.

- Glomeris europæa* and varieties, distribution in Rhenish Prussia, p. 246; VERHOEFF, Verh. Ver. Rheinland, liii, 1896. *G. limbata*, p. 41; LAMEERE, Ann. Soc. Belge Micr. xxii.  
*G. kirropeza*, Celebes, p. 480; ATTEMS, Abh. Senckenb. Ges. xxiii, n. sp.

### ZEPHRONIIDÆ.

- Arthrosphæra corrugata*, p. 359, figg. 49-51, *marginella*, p. 360, fig. 52, India; SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. spp.  
*Castanotherium nigro-maculatum*, Borneo, pl. ii, figg. 75-77, *conspicuum*, Borneo, pl. ii, figg. 78 & 79, *celebensæ*, Celebes, p. 15; SILVESTRI, Abh. Mus. Dresden, vi, n. spp.  
*Cyllosoma unicolor*, New Holland, p. 16, pl. ii, figg. 80-82; SILVESTRI, t. c. n. sp.  
*Sphæropæus tigratus*, pl. ii, figg. 71-73, *punctulatissimus*, pl. ii, fig. 74, Sumatra, p. 14, SILVESTRI, t. c. n. spp.  
*Zephronia pyrrhomelana*, Borneo, p. 480, pl. xxi, figg. 6 & 7, *criniceps*, Celebes, p. 482, pl. xxi, fig. 8, *anythra*, Halmahera, p. 483; ATTEMS, Abh. Senckenb. Ges. xxiii, n. spp.

### COLOBOGNATHA.

#### POLYZONOIDEA.

#### POLYZONIIDÆ.

- Polyzonium germanicum*, small form of, p. 6, figg. 18-20; NĚMEC, SB. Böhmisch. Ges. 1896, Art. xli.

### OLOGNATHA, new order.

SILVESTRI (51), p. 3.

### LYSIOPETALIDÆ.

- Lysiopetalum degenerans, bosniense*, Bosna-Quelle, p. 152, pl. xiv, fig. 8, *herzogowinense*, Trebinje, p. 153, *carinatum*, p. 153, pl. xiv, figg. 11 & 12, *lendenfeldii*, p. 154, pl. xiv, figg. 9 & 14, *degenerans, bosniense*, p. 200; VERHOEFF, Arch. Naturg. i, 1897.

### CHORDEUMIDÆ (incl. CRASPEDOSOMATIDÆ).

- Anamastigona meridionale*, Messina, p. 15, figg. 3, 4, & 5, SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.  
*Anthroherposoma*, p. 199, for *angustum*, Italy, p. 200; VERHOEFF, Arch. Naturg. i, 1897.  
*Atractosoma*, defined, p. 136; VERHOEFF, t. c. *A. athesinum*, distribution in Rhenish Prussia, p. 254; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.  
*Attemsia*, defined, p. 130; VERHOEFF, Arch. Naturg. i, 1897.  
*Bielzia*, n. g. for *B. kimakowizii*, p. 100; VERHOEFF, Zool. Anz. ix: gen. defined, p. 133; VERHOEFF, Arch. Naturg. i, 1897.  
*Brachytropisoma*, n. g. for *giardinæ*, Ficuzza, Sicily, p. 16, figg. 6-12, SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.

- Ceratosoma*, defined, p. 136, *apfelbecki*, Trekvic, p. 148, pl. xiv, fig. 2; VERHOEFF, Arch. Naturg. i, 1897.
- Chordeuma*, defined, p. 132; VERHOEFF, t. c. i, 1897. *C. silvestre*, distribution in Rhenish Prussia, p. 255; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.
- Chordeumella*, subg. n., cf. *Microchordeuma*, q. v.
- Craspedosoma*, characterised, p. 138, *rawlinsii*, *bosniense*, p. 181, figg. 1-4, *rawlinsii*, *transilvanicum*, p. 182, figg. 5 & 6; VERHOEFF, Arch. Naturg. 1897, Band i. *C. rawlinsii*, p. 253, distribution in Rhenish Prussia; VERHOEFF, Verh. Ver. Rheinland, liii, 1896. *C. rawlinsii*, n. var. *simplex*, Bohemia, p. 1, figg. 1-5; NEMEC, SB. Böhmisch. Ges. 1896, Art. xli.
- Craspedosoma*, subgen. of *Craspedosoma*, characterised, VERHOEFF, Arch. Naturg. i, 1897.
- Dyocerasoma*, subgen. of *Polymicroda*, characterised, p. 137; VERHOEFF, t. c.
- Haassa*, defined, p. 136; VERHOEFF, t. c.
- Haploporatia*, subgen. of *Heteroporatia*, defined, p. 134; VERHOEFF, t. c.
- Heterobraueria*, n. g. for *H. karoli*, Verh., p. 104; VERHOEFF, Zool. Anz. xx: defined, p. 133; VERHOEFF, Arch. Naturg. i, 1897.
- Heterolatelia*, n. g. for *nivale*, pp. 137 & 185, figg. 10-14; VERHOEFF, t. c.
- Heteroporatia*, defined, p. 134; VERHOEFF, t. c.: defined, 188, *bosniense*, Bosnia, p. 193, *mehelyi*, Buda-pesth, p. 195, figg. 15-17, *carniolense*, figg. 18 & 19, Adelsberg, p. 196, *alpestre*, Sulden, p. 197, figg. 20 & 21, sp. ? Trebovic, p. 198, fig. 34; VERHOEFF, t. c. *H. alpvagum*, described, p. 102, *transilvanicum*, described, p. 99; VERHOEFF, Zool. Anz. xx.
- Macheiriophoron*, defined, p. 138; VERHOEFF, Arch. Naturg. i, 1897.
- Mastigophorophyllon*, defined, p. 133; VERHOEFF, t. c.
- Mastigoporatia*, subgen. of *Heteroporatia*, defined, p. 134; VERHOEFF, t. c.
- Microbrachysoma*, n. g. for *alpestre*, pl. xiv, fig. 7, pp. 149 & 150; VERHOEFF, t. c.: defined, p. 132; VERHOEFF, t. c.
- Microchordeuma*, defined, p. 131; VERHOEFF, t. c. *M. gallicum*, distribution in Rhenish Prussia, p. 256; VERHOEFF, Verh. Ver. Rheinland, liii, 1896. *M. transilvanicum*, Kronstadt, p. 98; VERHOEFF, Zool. Anz. xx.
- M. (Chordeumella)*, n. subgen. for *brölemanni* Sarajevo, p. 151, pl. xiv, figg. 4 & 6, VERHOEFF, Arch. Naturg. i, 1897.
- Neotractosoma*, n. g., for *kleinenbergi*, Ficuzza, p. 18, figg. 13-18, SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.
- Orobainosoma*, defined, p. 135; VERHOEFF, Arch. Naturg. i, 1897.
- Orthochordeuma*, defined, p. 131; VERHOEFF, t. c. *O. germanicum*, distribution in Rhenish Prussia, p. 255; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.
- Oxydactylon*, defined, p. 136; VERHOEFF, Arch. Naturg. i, 1897.
- Polymicrodon*, defined, p. 137, *furcilliferum*, W. Bosnia, p. 148, *nivisatelles*, described, p. 183, figg. 7-9, subgen. of *Polymicrodon*, characterised, p. 137; VERHOEFF, t. c.
- Pterygophorosoma*, subgen. of *Craspedosoma*, characterised, p. 138; VERHOEFF, t. c.
- Rhiscosoma*, defined, p. 132; VERHOEFF, t. c.
- Scotherpes*, defined, p. 132; VERHOEFF, t. c.
- Trachysoma*, defined, p. 130; VERHOEFF, t. c.
- Triakontasoma*, defined, p. 136; VERHOEFF, t. c.
- Verhoeffia*, defined, p. 137; VERHOEFF, t. c.
- Xiphochateporatia*, subgen. of *Heteroporatia*, defined, p. 134; VERHOEFF, t. c.

## POLYDESMOIDEA.

### CHELODESMIDÆ.

- Catharodesmus alegrensis*, Brazil, p. 19, pl. iii, figg. 29-31, SILVESTRI, Abh. Mus. Dresden, vi; *C. lartiguei*, Pernambuco, p. 358, figg. 45-48, SILVESTRI, Ann. Soc. ent. Belgique, 1897: n. spp.  
*Chondrodesmus*, n. g. for *armatus*, S. José, fig. 37, p. 13, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.  
*Leptodesmus incarnatus*, Gualaquiza, p. 13, fig. 38, *interrupticolor*, Valle del Santiago, p. 14, fig. 39, SILVESTRI, t. c. n. spp.  
*Leiodesmus*, n. g., for *major*, Bolivia and Argentina, p. 5, or *trifidus*, Bolivia, p. 6, SILVESTRI, t. c. No. 283, n. spp.  
*L. proximus*, syn. for *Odontopeltis proxima*, p. 6; SILVESTRI, t. c.

### CHYTODESMIDÆ, n. fam.

- Family defined, p. 20; Cook, Brandtia.  
*Docodesmus*, defined, p. 20; COOK, t. c.  
*Stictodesmus*, n. g. for *creper*, Bogota, p. 20, COOK, t. c. n. sp.  
*Tridesmus*, n. g. for *sectilis*, Porto Rico, p. 21, COOK, t. c. n. sp.

### COMODESMIDÆ.

- Family defined, p. 25; Cook, Brandtia.  
*Modesmus*, n. g. for *jamaicensis*, p. 25; COOK, t. c.

### CRYPTODESMIDÆ.

- Family defined, p. 19; Cook, Brandtia.

### CRYPTURODESMIDÆ, n. fam.

- SILVESTRI, Boll. Mus. Torino, xii, No. 277.  
*Crypturodesmus*, n. g. for *targionii*, Mexico, p. 1, SILVESTRI, t. c. n. sp.

### CYCLODESMIDÆ.

- Family defined, p. 28; Cook, Brandtia.

### CYRTODESMIDÆ.

- Family defined, p. 28; Cook, Brandtia.

### DALODESMIDÆ, n. fam.

- Family defined, p. 26; Cook, Brandtia.

### DORATODESMIDÆ.

- Family defined, p. 27; Cook, Brandtia.  
*Doratodesmus muralis, vestitus*, W. Java, p. 27, COOK, t. c. n. spp.

### HERCODESMIDÆ, n. fam.

- Family defined, p. 20; Cook, Brandtia.

## HYNIDESMIDÆ, n. fam.

Family defined, p. 26; Cook, Brandtia.

## ONISCODESMIDÆ.

Family defined, p. 28; Cook, Brandtia.

## OTODESMIDÆ, n. fam.

Family defined, for *Trichopeltis* and *Otodesmus*, p. 24; Cook, Brandtia.

## OXYDESMIDÆ.

Key to genera, and list of species; Cook, Brandtia, p. 9.

*Ceratodesmus ansatus*, Tanga, p. 13, Cook, t. c. n. sp.

*Ctenodesmus gibber*, Jombene Range, E. Africa, p. 13, Cook, t. c. n. sp.

*Lacnodesmus valgus*, Africa, p. 10, *ituri*, N.W. of Albert Nyanza, *thyridotus*, Kamerun, p. 11, Cook, t. c. n. spp.

*Lyodesmus zoster*, Kawende, E. Africa, p. 13, Cook, t. c. n. sp.

*Orodesmus ellipticus*, Ngatana, *camelus*, Tanga, p. 14, Cook, t. c. n. spp.

*Oxydesmus asaba*, Asaba, R. Niger, *barombi*, Kamerun, *dentatus*, Africa, *dollfusii*, Africa, p. 11, *fuambo*, Fuambo, nr. Lake Tanganyika, *johnstonei*, Rio del Rey, *levis*, Togo Colony, *vittatus*, Cameroons, *xanthomelas*, Kilimanjaro, p. 12, Cook, t. c. n. spp.

*Phobodesmus cristatus*, Usambara, p. 13, Cook, t. c. n. sp.

*Rhododesmus priodus*, Dar es Salaam, p. 13, Cook, t. c. n. sp.

## PLATYRRHACHIDÆ.

*Acisternum pergranulatum*, Celebes, p. 13, SILVESTRI, Abh. Mus. Dresden, vi, n. sp.

*Acanthodesmus pinangensis*, Pinang, p. 433, figg. 6 & 6a, *perakensis*, Perak, p. 434, fig. 7, *petersii*, Malay Peninsula, p. 434, fig. 8, *lineatus*, Singapore, p. 434, fig. 9, Pocock, Ann. Nat. Hist. xx, n. spp.

*A. pilipes*, Borneo, generic type, p. 3; Cook, Brandtia.

*Adontodesmus*, n. g. for *tricuspidatus*, Timor, p. 14, pl. ii, figg. 69 & 70, SILVESTRI, Abh. Mus. Dresden, vi, n. sp.

*Barydesmus æquatoralis*, S. José, p. 16, fig. 42, *gualaquizensis*, Gualaquiza, p. 17, fig. 43, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. spp.

*Cradodesmus subspinosus*, generic type, p. 3; Cook, Brandtia.

*Cyphorrhacus*, n. g. for *andinus*, Ecuador, p. 52, Cook, t. c. n. sp.

*C. festa*, S. José, p. 16, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.

*Cyrtorachis trijadius*, Aru, p. 13, SILVESTRI, Abh. Mus. Dresden, vi, n. sp.

*Derodesmus flagellifer*, Ternate, p. 1, Cook, Brandtia, n. sp.

*Dicrododesmus bidens*, generic type, Sumatra, p. 3, Cook, t. c.

*Diodontodesmus*, n. g. for *D. woodfordi*, Solomon Is., p. 443, fig. 17, *verrucosus*, Solomon Is., p. 444, fig. 18, Pocock, Ann. Nat. Hist. xx, n. spp.

*Euryurus devillei*, Ecuador, p. 18, fig. 44, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.

*Eurydyrorhachis*, n. g., p. 435, for *E. dutiliensis*, N. Borneo, p. 436, fig. 10, *baramensis*, N. Borneo, p. 436, *discrepans*, Borneo, p. 437, fig. 10, Pocock, Ann. Nat. Hist. xx, n. spp.

*Eutrachyrhachis*, n. g., p. 441, for *E. margaritatus*, New Guinea, p. 442, figg. 16 & 16a, *victoriae*, New Guinea, p. 442, Pocock, t. c. n. spp.

- Harpodesmus laticollis*, generic type, Sumatra, p. 3, Cook, Brandtia.  
*Hoplurorhachis*, n. g., p. 437, for *H. everettii*, N. W. Borneo, p. 437, figg. 12 & 12a, *hosei*, Baram (Borneo), p. 438, fig. 13, Pocock, Ann. Nat. Hist. xx, n. spp.  
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*Leucodesmus weberi*, Sumatra, generic type, p. 3, Cook, Brandtia.  
*Leurodesmus sumatranus*, generic type, p. 2, Cook, t. c.  
*Mniodesmus crossotus*, generic type, Java, p. 2, Cook, t. c. n. sp.  
*Nanorhachus*, n. g. for *luciae*, Santa Lucia, p. 52, Cook, t. c.  
*Paradesmorhachis*, n. g. for *P. solomonis*, Solomon Is., p. 445, fig. 19, Pocock, Ann. Nat. Hist. xx, n. sp.  
*Phractodesmus subvittatus*, generic type, p. 1, Cook, Brandtia.  
*P. ridleyi*, Singapore, p. 438, Pocock, Ann. Nat. Hist. xx, n. sp.  
*Phyodesmus pictus*, generic type, p. 1, Cook, Brandtia.  
*P. ornatus*, Borneo, p. 428, fig. 1, *hosei*, Borneo, p. 428, fig. 2, *vittatus* Borneo, p. 429, fig. 3, *areatus*, Borneo, p. 429, Pocock, Ann. Nat. Hist. xx; *P. sublimatus*, Borneo, p. 12, pl. ii, fig. 68, SILVESTRI, Abh. Mus. Dresden, vi, n. spp.  
*Platyrrhacus bifasciatus*, Valle del Santiago, p. 14, fig. 40, SILVESTRI, Boll. Mus. Torino, xii, No. 305: *P. strenuus*, Ecuador, p. 19, pl. iii, figg. 32-34, SILVESTRI, Abh. Mus. Dresden, vi: *P. complicatus*, Ternate, p. 492, pl. xxii, figg. 17 & 18, *amauros*, Borneo, p. 493, *georgos*, Halmahera, p. 494, *haplopus*, Halmahera, p. 494, fig. 14, *baramanus*, Borneo, p. 496, fig. 15, *plakodonotus*, Borneo, p. 497, fig. 16, ATTEMS, Abh. Senckenb. Ges. xxiii: n. spp.  
*P. concolor*, Borneo, p. 490, pl. xxi, fig. 11, *sumatranus*, Sumatra, p. 496, ATTEMS, t. c.  
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*Prodesmus submissus*, Sumatra, generic type, p. 3, Cook, Brandtia.  
*Psammodesmus*, n. g. for *cos*, Colombia, p. 52, Cook, t. c.; *P. camerani*, San José, p. 15, fig. 41, SILVESTRI, Boll. Mus. Torino, xii, No. 305: n. spp.  
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*Stenoniodes*, n. g., p. 430, for *S. catorii*, Sandakan, p. 431, figg. 4 & 4a, *angulicollis*, Sandakan, p. 432, *creaghii*, N. Borneo, p. 432, figg. 5 & 5a, *baluensis*, Sibitu Is., Sulu Archipelago, p. 433, Pocock, Ann. Nat. Hist. xx, n. spp.  
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- Brachydesmus*, copulation feet of, p. 144, VERHOEFF, Arch. Naturg. i, 1897:  
*B. lapadensis*, Halbinsel Lapad, p. 139, pl. xiii, fig. 1, *lapidivagus*, Castelnovo, p. 140, pl. xiii, figg. 2 & 3, *apfelbeckii*, Trebinje, p. 140, pl. xiii, fig. 3, *lobifer*, Ramathal bei Jablanica, p. 141, pl. xiii, fig. 5, *lobifer* subsp. *unciger*, between Mostar and Buna, p. 141, pl. xiii, fig. 6, *dalmaticus*, Cattaro, p. 141, pl. xiii, fig. 6, *glabrimarginalis*, Mostar-Blato, p. 142, *reversus*, Trebevic, p. 142, *bosniensis*, Sarajevo, Jablanica, p. 143, pl. xiii, fig. 9, *polydesmoides*, Sarajevo, p. 143, *herzegovinensis*, Jablanica, p. 143, pl. xiii, fig. 8, *subterraneus*, Apfelbeck, p. 143, pl. xiii, figg. 13, sp. ? p. 144, pl. xiii, fig. 10, VERHOEFF, Arch. Naturg. i, 1897.

- Mastigonodesmus*, n. g., p. 20, for *destefanii*, Sicily, p. 21, figg. 19 & 20; SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.  
*Pachyurus fasciatus*, Halmahera, p. 487, pl. xxi, fig. 13, *xestoloma*, Borneo, p. 486, *erythrokrepis*, Celebes, p. 490, pl. xxi, figg. 12; ATTEMS, Abh. Senckenb. Ges. xxiii, n. spp.  
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*Chonodesmus*, n. g. for *regularis*, S. America, p. 23; COOK, t. c. n. sp.  
*Compsodesmus limacinus*, *cupulifer*, *spinatus*, *kuako*, Kamerun, p. 22; COOK, t. c. n. spp.  
*Ophrydesmus*, n. g. for *gede scaurus*, *tengger*, Java, *pugnus*, Pengalengang, p. 24; COOK, t. c. n. spp.  
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- For *Stiodesmus*, *Cryptodesmus ornamentatus*, &c. p. 25; COOK, t. c.  
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*Chondromorpha*, n. g. for *severini*, Madras, p. 356, figg. 38-40; SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. sp.  
*Eustrongylosoma insularis*, Carolina, p. 11, pl. ii, figg. 63 & 64, *transverse-fasciatum*, New Holland, p. 12; SILVESTRI, Abh. Mus. Dresden, vi, n. spp.  
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*Strongylosomorpha*, n. g. for *van-volssemi*, Pedro Acu, p. 357, figg. 41-44; SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. sp.  
*Strongylosoma signatum*, Soah Konorah, p. 483, pl. xxi, fig. 10, *tsuenthalii*, Borneo, p. 484, pl. xxi, fig. 9, *hetairon*, Celebes, p. 486, *nodulosum*, Borneo, p. 486; ATTEMS, Abh. Senckenb. Ges. xxiii, n. spp.

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*Trichomorpha*, n. g. defined, for *elegans*, Gualaquiza, figg. 34 & 35, p. 11;  
SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.

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*Julus ligulifer*, described, p. 4, figg. 12 & 13; NÉMEC, SB. Bohmisch. Ges. 1896, Art. xli; *J. belgicus*, *bertkawi*, p. 258, *alemannicus*, *fallax*, *nitidus*, p. 259, *densestriatus*, p. 260, *silvarum*, *londinensis*, p. 261, *foetidus*, p. 262, distribution in Rhenish Prussia; VERHOEFF, Verh. Ver. Rheinland, liii, 1896; *J. distinctus*, Algeria, described, p. 266, pl. iv, figg. 22 & 23; BRÖLEMANN, Ann. Sci. Nat. iv; *J. psilopygus*, p. 166, figg. 5 & 6, *parisiiorum*, Paris, p. 214; VERHOEFF in BRÖLEMANN, Feuille Natural. xxvi; *J. kervillei*, n. var. *meridionalis*, Ahusquy, p. 114, figg. xviii & xix; BRÖLEMANN, op. cit. xxvii: (*Leptoiulus*) *ciliatus*, described, p. 115, *adensameri*, p. 116, *duebeli*, p. 117, *alpinvagus*, p. 118; VERHOEFF, Zool. Anz. xx.  
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- p. 269, pl. iv, figg. 34-38; BRÖLEMANN, Ann. Nat. Sci. iv; *J. proximus*, Prague, p. 3, figg. 6-11, *cærulans*, Bohemia, p. 5, figg. 14-17; NĚMEC, SB. Bohmisch. Ges. 1896, Art. xli : n. spp.
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- Microiulus*, n. subg. of *Julus* for *M. möbiusi*, p. 119; VERHOEFF, t. c.
- Micropodoiulus* (subg. *Haplophyllum*) *mehelyi*, p. 120 & 121; VERHOEFF, t. c.; *M. ligulifer*, distribution in Rhenish Prussia, p. 263; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.
- M. spathifer*, Ahusquy, p. 111, figg. xiii-xv; BRÖLEMANN, Feuille Natural. xxvii, n. sp.
- Ophiulus targionii*, Sicily, p. 28, figg. 27-30; SILVESTRI, Bull. Soc. ent. Ital. xxix.
- Pachyiulus communis*, p. 24, *œnologus*, p. 25, Sicily; SILVESTRI, t. c.
- Schizophyllum sabulosum*, distribution in Rhenish Prussia, p. 263, *mediterraneum*, p. 264; VERHOEFF, Verh. Ver. Rheinland, liii, 1896; *S. lapidarium*, Algeria, described, p. 262, pl. iii, figg. 11-21, *fusco-unilineatum* and varieties, Algeria, described, p. 256, pl. iii, figg. 1-10; BRÖLEMANN, Ann. Sci. Nat. iv.
- S. ilicis*, Banyuls, p. 116, figg. xxiii-xxv, BRÖLEMANN, Feuille Natural. xxvii, n. sp.
- Stenophyllum*, n. g., p. 122, for *S. hermanni-mülleri*, p. 122, and *S. primitivum*, p. 123, VERHOEFF, Zool. Anz. xx.
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- Stemmatoiulus*, larva of, p. 47; COOK, Brandtia. *S. bioculatus*, Valle del Santiago, p. 2, figg. 2-8, described; SILVESTRI, t. c.
- S. diversicolor*, S. José, p. 3; SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.

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## CAMBALIDÆ.

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- Julomorpha flagelligera*, New Holland, p. 11, pl. ii, figg. 56 & 57, SILVESTRI, t. c., n. sp.
- Nannolene fasciolota*, Colombia, p. 355, fig. 36, SILVESTRI, Ann. Soc. ent. Belgique, 1897; *N. tenella*, p. 8, *dilucida*, p. 9, fig. 27, Valle del Santiago, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. spp.

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- P. rugosetta*, Cayenna, p. 355, fig. 37, SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. spp.

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## SPIROSTREPTIDÆ.

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- Diaporus augus*, Valle del Santiago, p. 5, figg. 14 & 15; SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.
- Epistreptus*, n. g. for *oxenus*, S. José, p. 5, figg. 11 & 12; SILVESTRI, t. c. n. sp.
- Orthoporus*, n. g. for *diaporoides*, Bolivia, p. 7; SILVESTRI, Boll. Mus. Torino, xii, No. 283, n. sp.; *O. reluctator*, Guayaquil, p. 5, fig. 13; SILVESTRI, Boll. Mus. Torino, xii, No. 305; *O. poculifer*, p. 349, figg. 11-13, *punctatissimus*, p. 350, figg. 14-17, Cayenna; SILVESTRI, Ann. Soc. ent. Belgique, 1897 : n. spp.
- Odontopyge bicolor*, Fra Matagoi e Lugh, p. 304, *litoranea*, Brava, p. 305, *subelegans*, Brava, p. 306; SILVESTRI, Ann. Mus. Genova, xvii; *O. kraepelini*, Mhonda, p. 37, pl., fig. 1, *fasciata*, Zanzibar, p. 40, pl., fig. 6; ATTEMS, Mt. Mus. Hamburg, xiii; *O. severini*, Abyssinia, p. 350, figg. 18-20, *leptoproctus*, Transvaal, p. 351, figg. 21-23; SILVESTRI, Ann. Soc. ent. Belgique, 1897; *O. spinosissima*, Guinea, p. 17, pl. iii, figg. 15-17; SILVESTRI, Abh. Mus. Dresden, vi, n. spp.
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- S. macrotis*, p. 27, pl., fig. 9, *brachycerus*, p. 29, pl., fig. 5, *semicylindricus*, p. 30, pl., fig. 10; ATTEMS, Mt. Mus. Hamburg, xiii; *S. javanicus*, Java, p. 498, *pachyurus*, p. 500, *segmentatus*, Borneo, p. 504, fig. 34; ATTEMS, Abh. Senckenb. Ges. xxiii.
- Thyropygus laticollis*, Java, p. 3, figg. iii & iv, *acuminatus*, Java, p. 3, pl. i, figg. 4 & 5, *heterurus*, Calamunos, p. 3, pl. i, figg. 6 & 7, *orthurus*, Natal, p. 16, pl. iii, figg. 1-4; SILVESTRI, Abh. Mus. Dresden, vi, n. spp.
- Tropitrachelus*, n. g. for *unidentatus*, Carolina Is., p. 4, figg. v-vii; SILVESTRI, t. c., n. sp.
- Urotropis cameranii* = *Archispirostreptus cameranii*, Bolivia, p. 6; SILVESTRI, Boll. Mus. Torino, xii, No. 283.

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## SPIROBOLIDÆ.

- Rhinocricus*, defined, p. 519, table of E. Indian spp., p. 521, *compactilis*, Halmahera, p. 523, fig. 29, *quintiporus*, Halmahera, p. 524, figg. 19-21, *virgatus*, Borneo, p. 526, figg. 27 & 28, *pyrrholoma*, Celebes, p. 527, figg. 24 & 25, *pachyskeles*, Batjan, p. 528, *jucundus*, Ternate, p. 529, *xyctus*, Halmahera, p. 530, *xanthopygus*, Halmahera, p. 531, figg. 22 &

- 23, *lampromerus*, Halmahera, p. 532; ATTEMS, Abh. Senckenb. Ges. xxiii; *R. analaucus*, Celebes, p. 4, pl. i, fig. 10, *styliferus*, Celebes, p. 5, pl. i, figg. 11-13, *micropygus*, Viti, p. 5, pl. i, figg. 14-16, *bicornis*, Viti, p. 5, pl. ii, figg. 17-19, *excavatus*, Viti, pl. i, fig. 20, *fulcatus*, New Holland, pl. i, figg. 21 & 22, *cognatus*, Celebes, pl. i, figg. 23 & 24, *neglectus*, Celebes, pl. i, figg. 25 & 26, p. 6, *anomalous*, Celebes, pl. i, figg. 27-30, *xanthopygus*, Celebes, pl. i, figg. 31 & 32, *rubro-maculatus*, Celebes, pl. i, figg. 33-36, *submissus*, Aru, pl. i, fig. 37, p. 7, *rubro-marginatus*, Aru, pl. i, figg. 38 & 39, *meyeri*, Celebes, pl. i, figg. 40 & 41, ii, figg. 42-46, *heteropus*, Celebes, pl. ii, figg. 47-51, p. 8, *filosus*, Celebes, pl. ii, figg. 52 & 53, *setigerus*, Carolina Is., *mediosetriatus*, Sangi Is., p. 9, *haasei*, Celebes, *elongatus*, Celebes, p. 10, *haitophilus*, Haiti, p. 18, pl. iii, figg. 24-27; SILVESTRI, Abh. Mus. Dresden, vi; *R. pillaulti*, Cayenna, p. 352, figg. 24 & 25, *striatellus*, Brazil, p. 353, figg. 26-30, *marginellus*, Pernambuco, p. 353, figg. 31 & 32; SILVESTRI, Ann. Soc. ent. Belgique, 1897; *R. heteromorphus*, Bolivia, *segmentatus*, Argentina, p. 8, *indiscretus*, Argentina, *gracilipes*, Bolivia, p. 9, *nodulipes*, Bolivia, p. 10, *unicornis*, Argentina, p. 11; SILVESTRI, Boll. Mus. Torino, xii, No. 283; *R. bifusciatus*, p. 6, figg. 16 & 17, *intercalatus*, p. 6, figg. 18 & 19, S. José, *levigatus*, S. José, p. 7, figg. 22 & 23, *longeappendiculatus*, Candar, p. 8, figg. 24-26; SILVESTRI, Boll. Mus. Torino, xii, No. 305 : n. spp.
- R. diversicauda*, Ecuador, p. 7, figg. 20 & 21; SILVESTRI, t. c.
- Spirobolus proporus*, Kihengo, p. 27; ATTEMS, Mt. Mus. Hamburg, xiii, n. sp.
- Trachelomegalus*, g. defined, *hoplurus*, p. 517, figg. 36-38; ATTEMS, Abh. Senckenb. Ges. xxiii.
- Trigonulus*, g. discussed, p. 504, *gasii*, Borneo, p. 506, fig. 30, *orinomus*, p. 513, fig. 51; ATTEMS, Abh. Senckenb. Ges. xxiii.
- T. densestriatus*, Borneo, p. 507, fig. 49, *flavipes*, Celebes, p. 508, figg. 47 & 48, *brachyurus*, Batjan, p. 510, figg. 39-41, *karykinus*, Halmahera, p. 512, figg. 44-46, *badius*, Borneo, p. 512, fig. 50, *orphinus*, Borneo, p. 513, figg. 53-55, *soleatus*, Halmahera, p. 514, fig. 42, *parvulus*, Borneo, p. 516; ATTEMS, t. c.; *T. acolustus*, Cayenna, p. 354, figg. 33-35; SILVESTRI, Ann. Soc. ent. Belgique, 1897; *T. bravensis*, Brava, p. 307; SILVESTRI, Ann. Mus. Genova, xvii; *T. macropygus*, Luzon, p. 10, pl. ii, figg. 54 & 55, *sanguine-maculatus*, Madagascar, p. 18, pl. iii, figg. 18-20; SILVESTRI, Abh. Mus. Dresden, vi : n. spp.

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1. BROWN, A. W. XII. *Myriopoda and Prototracheata*. Zool. Record, xxxiii, 1896, p. 11.
2. \*CAMERANO, L. Sul *Peripatus quitensis*, Schmarda. Atti Ac. Torino, xxxii, pp. 395-398.
3. —. Nuova specie di *Peripatus (balzani)* raccolta dal Prof. B. Balzan in Bolivia. Ann. Mus. Genova, xviii, pp. 12-15.
4. SKUSE, F. A. A. Additional localities for *Peripatus leuchartii*, Säng. Rec. Austral. Mus. iii, 1897, pp. 10 & 11.
5. WARD, J. R. Notes on *Peripatus moseleyi*. J. Quekett Club, vi, pp. 424-428.

\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.



# XIII. INSECTA.

By D. SHARP.

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## INTRODUCTION.

THE most remarkable discovery of the year is the unsegmented animal considered by ADENSAMER (7) to be the female imago of a pupiparous Dipteron.

Much greater attention has been given to Termitidæ than was ever the case before. HAVILAND describes (463) a large number of new forms, so that his paper with those of WASMANN (1153) and FROGGATT (370) just about double the number of described forms. The illustrations of Australian Termitaria by SAVILLE-KENT (957) are very valuable.

The eighth Vol. of DALLA TORRE'S (229) Catalogue brings this important work within measurable distance of completion. This volume is entirely devoted to fossorial Hymenoptera and is the most bulky of the series.

Sir George HAMFSON has continued his remodelling of the taxonomy of Pyraloid moths by the treatment of several families (452, 453)

Faunistic works are as usual both numerous and important. The *Biologia Centrali-Americana* (416) has made fair progress. Colonel BINGHAM'S Volume (76) on the *Hymenoptera* of British India is a valuable addition to entomological literature. HORMUZAKI'S paper (495) on the *Lepidoptera* of the Bukowina deserves notice; KERREMANS' memoir (567) on the *Buprestidæ* of Brazil contributes no less than 235 new species. Mr MEYRICK has treated the Australian *Elachistidæ*, recording 254 species, nearly all of which are new (747). Lord WALSHINGHAM (1139) records 302 species of *Micro-lepidoptera* from the West Indies; Cuba has as yet produced only 23 species, though it probably shelters several hundred. One of the most considerable faunistic works is that of DAVIS on N. American *Tryphoninæ* (234). COQUILLETT (218) on N. American parasitic *Diptera* is also important; and CASEY (162) has added a large number of new species of *Coleoptera* to the N. American fauna.

In Morphology we may call attention to GENTHE'S paper (396) on the comparative anatomy of the mouth-parts of *Micro-lepidoptera*; to PÉREZ'S discovery (824) of a new kind of bee proboscis; to BORDAS' extensive investigations (104-109) on the internal anatomy of *Orthoptera*; and to BRÜEL'S (137) anatomy and development of the sexual ducts and annexes in *Muscidæ*; while KLAPÁLEK'S memoir on comparative anatomy of *Perlidæ* (593) appears to be of considerable value, and PRATT'S account (881) of imaginal discs in *Diptera* will be found very useful by students of metamorphosis. MEINERT'S (736) views as to the morphology of mouth-parts will require careful consideration.

KULAGIN (642) has made another contribution to the embryology of parasitic *Hymenoptera*, and Dr HEYMONS has given us an opportune sketch (478) of the development of a Thysanuran.

The most important work on embryology is however the history of the development of a Mason-bee by CARRIÈRE and BÜRGER (161). The work is divided into two parts; it was commenced by Prof. Carrière, and after his decease prepared for publication by his colleague, who appears to be chiefly responsible for the second part of the work. They confirm the view, previously put forward for *Orthoptera*, that the mesenteron is derived either from ectoderm or directly from blastoderm.

The publication of a fifth volume of FABRE'S "Souvenirs" (303) is welcome. It gives details of the habits and life-histories previously unknown of several common Mediterranean Insects. Unfortunately the volume exhibits, in more than one place, an inadequate acquaintance with the work of other Naturalists. None the less important and interesting because of its brevity is PANTEL'S sketch (819) of the larval

life of a Tachinid fly parasitising a Phasmid in Spain. AURIVILLIUS' paper (36), on forms intermediate between solitary and social bees, contains much that is important from a general point of view, besides the interest of the facts he records: VERHOEFF (1123) also contributes to this subject. MARCHAL (707) on Hessian flies and their parasites is remarkable from the variety of points of general interest it discusses.

By a curious coincidence we have two important biological papers on the same larva of one of the neglected groups of Insects. Both MIALL and SHELFORD (750) and BENGTESSON (66) have apparently treated their subject in a thoroughly serious manner, and BENGTESSON has added some important morphological considerations as to Insects generally, especially in connection with the trophi.

URECH (1109) introduces a new method of experimenting on the colouration of butterflies by ligature of the pupa.

JANET has given us four parts of his studies on ants (545-548); they give a great variety of information in a concise and interesting manner. BORRIES (113) also makes an important addition to the natural history of Aculeate *Hymenoptera* in the Danish language. In his papers on the larvæ of *Sphingide* PIEPERS (867, 868) discusses the subject in a philosophical manner from the standpoint of thirty years of observation: he dismisses as "phantasy" all that has been written as to the protective value of their colouration.

In reference to mimicry we have WEBSTER'S plea (1175) in favour of the actions of the individual as being a factor of importance. MAYER'S work (728) on the colouration of butterflies also treats of mimicry.

The new periodical "L'Année biologique" gives analyses of memoirs, and in some cases adds to them criticisms and comments. We have in several cases treated analyses of this kind as original communications. The Recorder takes the liberty of asking that entomologists should distinguish the new genera and species they describe by adding "n. gen." or "n. sp." after the name. The practice of indicating novelties by appending "mihi" or the describer's name is bad, not being sufficiently distinctive. He also asks entomologists to be so kind as to point out any errors or omissions of importance in the Record, and thanks those who have already done this.

## I. TITLES.\*

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2. —. Description de deux *Entomoscelis* paléarctiques. *T. c.* pp. 42, 43. [*Coleoptera*.]
3. —. Diagnoses de deux *Ptinus* [*Bruchus*] français nouveaux. *T. c.* pp. 131, 132. [*Coleoptera*.]
4. —. Notes sur les *Buprestides* paléarctiques. [Continuation.] Rev. ent. franc. 1897, pp. 1-37. [*Coleoptera*.]
5. ACKERMANN, K. Thierbastarde. Abh. Ver. Kassel, xxxii, pp. 103-121. Insects, pp. 111-121.
6. ACLOQUE, A. Faune de France, Orthoptères, Neuroptères, Hyménoptères, Lépidoptères, Hémiptères, Diptères, Aphaniptères, Thysanoptères, Rhipiptères. Paris, 1897, viii & 516 pp.

\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

7. ADENSAMER, T. Über *Ascodipteron phyllorhinæ* (n. gen., n. sp.) eine eigenthümliche Pupiparenform. SB. Ak. Wien, cv, Abth. i, pp. 400-415, two pls. [*Diptera*.]
8. AGASSIZ, G. Notice sur la chasse aux papillons nocturnes, autour des lampes électriques, à Aix-les-bains, Savoie. Mt. Schweiz. ent. Ges. ix, pp. 443-450. [*Lepidoptera*.]
9. ALFKEN, J. D. Ueber einige wenig bekannte *Halictus*-Arten. Ent. Nachr. xxiii, pp. 101-108. [*Hymenoptera*.]
10. —. Eine neue *Megachile*-Art. Ent. Nachr. xxiii, p. 161. [*Hymenoptera*.]
11. ALLEN, J. A. The Merton rules. Science vi, pp. 9-19.  
Discussion of the pamphlet by Lord Walsingham and J. H. Durrant. [Zool. Rec. 1896. Insecta Titles (1200).]
12. ALLUAUD, C. Descriptions de *Carabiques* nouveaux de Madagascar. Ann. Soc. ent. France, 1897, pp. 165-181. [*Coleoptera*.]
13. —. Contributions à la faune entomologique de la région malgache. 5<sup>e</sup> note. Bull. Soc. ent. France, 1897, pp. 150-152. [*Coleoptera*.]
14. —. Énumération des *Dytiscidæ* et *Gyrinidæ* des îles Mascareignes et Séchelles. T. c. pp. 210-214. [*Coleoptera*.]
15. —. *Céléoptères* recueillis à Majunga (Madagascar) par M. Bastard. Bull. Mus. Paris, 1896, pp. 371-376.
16. ALPHÉRAKY, S. *Lépidoptères* rapportés par Mr. Gr. Groum-Grshimailo de l'Asie centrale en 1889-1890. Romanoff Mem. ix, pp. 1-80, pls. i-iv.
17. —. *Lépidoptères* des provinces chinoises Sé-Tchouen et Kham recueillis en 1893 par Mr. G. N. Potanine. T. c. pp. 83-148.
18. —. *Lépidoptères* de l'Amour et de la Corée. T. c. pp. 151-183, pls. x-xiii.
19. —. Mémoire sur différents *Lépidoptères* tant nouveaux que peu connus, de la faune paléarctique. Romanoff Mem. ix, pp. 185-226.
20. —. Sur quelques *Lépidoptères* rapportés de l'Asie, en 1893-1895, par l'expédition de Mrs. Roborowsky et Kozlov. T. c. pp. 229-237.
21. —. *Lepidopteren* aus Kamtschatka gesammelt von O. Herz. T. c. pp. 301-347.  
Cf. HERZ (476).
22. ANDRÉ, E. Description de trois nouvelles espèces de *Mutiles* de l'Afrique orientale appartenant au Musée royal de Belgique. Bull. Soc. Zool. France, 1897, pp. 17-22. [*Hymenoptera*.]  
[ANDRÉ, E. Species des *Hyménoptères* d'Europe et d'Algérie. Fasc. 57-60.]  
Two new volumes are commenced in these parts: cf. KIEFFER (574) and MARSHALL (718).
23. ANON. Die San José-Schildlaus (*Aspidiotus perniciosus* Comstock). Denkschrift herausgegeben vom kaiserlichen Gesundheitsamt. Berlin, 8vo., 1898, 47 pp., 2 pls.
24. APFELBECK, V. Fauna Insectorum balcanica III. 1, Die in Bosnien und der Hercegovina und den benachbarten dalmatinischen Grenzgebieten bisher aufgefundenen Arten aus der *Coleopteren*-familie "*Pselaphidæ*." 2, Balkan-*Apiden* (Bienen). Beitrag zur Kenntniss der Verbreitung der europäischen Bienen-Arten. 3, Zur Charakteristik der Invertebratenfauna von Bosnien und der Hercegovina (*Coleoptera*). Wiss. Mitt. Bosnien, v, pp. 502-520.



25. ASHMEAD, W. H. *Nitelopterus*, a new Larrid genus. Ent. News Philad. 1897, pp. 22, 23. [*Hymenoptera*.]
26. —. Descriptions of five new *Hymenopterous* parasites on *Canarsia hammondi* (Riley). P. ent. Soc. Washington, iv, pp. 124–131.
27. —. A new species of *Roptronia*. T. c. pp. 132, 133. [*Hymenoptera*.]
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29. —. Descriptions of some new genera and species of Canadian *Proctotrypidæ*. Canad. Ent. xxix, pp. 53–55. [*Hymenoptera*.]
30. —. Two new parasites from *Eupoeya slosoniæ*. T. c. p. 113. [*Hymenoptera*.]
31. —. Descriptions of five new genera in the family *Cynipidæ*. T. c. pp. 260–263. [*Hymenoptera*.]
32. —. Description of some new genera in the family *Cynipidæ*. Psyche, viii, pp. 67–69. [*Hymenoptera*.]
33. —. Descriptions of two new fossorial wasps. T. c. pp. 129, 130. [*Hymenoptera*.]
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35. —. A new water-bug from Canada. Canad. Ent. xxix, p. 56. [*Hemiptera*.]
36. AURIVILLIUS, C. Über Zwischenformen zwischen socialen und solitären Bienen. Festschrift Lilljeborg, 1896, pp. 67–78. [*Hymenoptera*.]
37. —. Bemerkungen zu den von J. Chr. Fabricius aus Dänischen Sammlungen beschriebenen *Lepidopteren*. Ent. Tidskr. 1897, pp. 139–174.
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## II. BIOLOGY.

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 New Zealand: *Hymenoptera*, CAMERON (157); *Lepidoptera*, MEYRICK (747-749); HAWTHORNE (464); *Neuroptera*, FROGGATT (370); *Orthoptera*, HUTTON (521) and *Mantidæ*, HUTTON, Tr. N. Zealand Inst. xxix, p. 242.  
 S. Georgia: *Aptera*, SCHÄFFER (959).

### 3. PALÆARCTIC REGION.

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*Coleoptera*. ABEILLE (4), DESBROCHERS (238, 240), ESCHERICH (297); FAUST, Syria and Turkestan, *Curculionidæ* (324); JACOBSON (530), D'ORBIGNY (800), PIC (841), *id.*, *Ptinidæ*, *Anthicidæ* (863); REITTER (899, 900, 901, 903, 905), SCHULTZE (983), SCHWARZ (992), SEMENOW (1001), TSCHITSCHÉRINE (1096, 1097).

Asiatic Russia and Mongolia: REITTER (912).

*Hymenoptera*. BERTHOUMIEU (70, 71), FRIESE, *Podalirius* (363); FRIESE, *Panurginus* (365); KIEFFER (574), KONOW (611, 615, 616); KONOW, *Xiphydriini* (610); KONOW, W. Asia, Siberia and Japan (617); MARSHALL (718).

*Lepidoptera*. ALPHÉRAKY, Amur and Korea (18); ALPHÉRAKY (19); *id.*, Kamtschatka (21), and HERZ (476); STAUDINGER (1052).

*Aphaniptera*. WAGNER (1138).

*Hemiptera*, *Heteroptera* and *Homoptera*. HORVÁTH (504).—*Coccidæ*, NEWSTEAD (783).

#### (b.) Collective Europe.

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*Hymenoptera*. KIEFFER (575), HOWARD (512), KONOW (618), KRIECHBAUMER (638), SCHMIEDEKNECHT (967, 970, 971).

*Lepidoptera.* ELWES & EDWARDS (286).

*Diptera.* BECKER (59).

*Hemiptera.* MELICHAR, *Homoptera*, p. 147, *Wien. ent. Zeit.* xvi, CHOLODKOVSKY, *Aphididæ* (182); SULC, *Coccidæ* (1066).

### (c.) *British Islands.*

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*Hymenoptera.* Part vii of monograph of British *Braconidæ*, MARSHALL (717).—n. spp., MARSHALL (718).—Novelties, MARSHALL, p. 149, *Ent. Mag.* xxxiii.—Novelty, *Cilissa melanura*, SLADEN, p. 229, *Ent. Mag.* xxxiii. Novelty, *Psen concolor*, MORICE, p. 252, *Ent. Mag.* xxxiii.—Novelty, *Hedychridium coriaceum*, MORICE, p. 181, *t. c.* Novelty, *Mesochorus tetricus*, BIGNELL, p. 257, *Ent. Mag.* xxxiii. Novelties, *Tenthredinidæ*, MORICE, pp. 209-211, *Ent. Mag.* xxxiii.—Critical and synonymical remarks on Leach's and Stephens' *Tenthredinidæ*, KONOW, *Illustr. Wochenschr.* ii, p. 423.

*Lepidoptera.* BARRETT (54).—Account of local lists of British *Lepidoptera*, BARRETT, pp. 187-198 & 268-274.—The British *Solenobiæ*, BARRETT, pp. 125-129.—Novelty (Ireland), *Platyptilia tesseradactyla*, BARRETT, p. 25, *Ent. Mag.* xxxiii, and p. 43, *Irish Natural.* vi.

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*Aphaniptera.* n. spp., ROTHSCHILD (945, 946).

*Hemiptera.* Novelty, *Kermes variegatus*, NEWSTEAD, p. 267, *Ent. Mag.* xxxiii.—*Coccidæ*, n. sp., GUERNSEY, NEWSTEAD (783).

*Orthoptera.* The British *Orthoptera*, BURR (142).—Novelty, *Forficula lemei*, BURR, p. 148, *Ent. Mag.* xxxiii.—Novelty, *Apterygida arachidis*, WALKER, p. 132, *Ent. Mag.* xxxiii.—Novelty, *Pycnoscelus indicus*, BURR, p. 14, *Ent. Mag.* xxxiii.

*Aptera.* n. sp. *Cyphoderus martelli*, CARPENTER (158), see also *op. id.* p. 257.

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(d.) *North Europe and Siberia* [see also (a.) and (b.)].

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*Hymenoptera.* AURIVILLIUS, Sweden (40).—THOMSON, Sweden (1063).

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*Orthoptera.* ZUBOWSKY, St. Petersburg (1203).

(e.) *Central and Eastern Europe, incl. Denmark* [see also (a.) and (b.)].

*Insecta.* KIEFFER, Lorraine, galls (578).—SINTENIS, Dorpat (1015).

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(f.) *France* [see also (a.) (b.) and (g.)].

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(g.) *Southern Europe and Mediterranean Basin* [see also (a.) (b.) and (f.)].

*Insecta*. Catalonia, CUNI (225).—Saragossa, DUSMET, pp. 75 & 76, An. Soc. Espan. 1897.—Sierra de Béjar, MATEOS, pp. 204–209, Act. Soc. Espan. 1897.—Pozuelo de Calatrava, FUENTE, p. 131, Act. Soc. Espan. 1897.—Island of Alboran, RICHARD & NEUVILLE, Mem. Soc. zool. France, x, pp. 75–87, and *Odonata* and *Orthoptera*, BOLIVAR, Bull. Soc. zool. France, 1897, p. 36.—Algeria, PIC (860).—Galls of Mantua, TROTTER (1095).—Vallombrosa, CECCONI, Bull. Soc. ent. Ital. xxix, pp. 161–224.—Roumania, JAQUET, pp. 544–547, Bull. Soc. Bucarest, vi.

*Coleoptera*. ABEILLE (2), GUILLEBEAU (443, 444), PIC (861).—S. Eur. and Syria, PIC (842).—Portugal, *Col. do concelho de Sabrosa*, concluded, BARROS, pp. 186–194, Ann. Sci. nat. Porto, iii.—Spain, FUENTE (386).—N. Africa, FAIRMAIRE (313), VAULOGER (1116).—*Staphylinidæ*, Catalogue of, FAUVEL (328A).—Algeria and Morocco, VAULOGER (1117).—Algeria and Tunis, VAULOGER (1119).—Egypt and Algeria, ABEILLE (1).—Algeria, BOURGEOIS (118), BRENSKE (130), CHOBOUT (176, 177, 178, 179, 180), CLOUET, *Copridæ* (186), FAIRMAIRE (315), GUILLEBEAU (445), LESNE (674), MEYER, *Curculionidæ* (746), PIC (845, 849, 850, 862), PIC, *Anthicidæ*, (840); PIC, pp. 221 & 222, Bull. Soc. ent. France, 1897 and Kabylia, PIC, p. 71, Echange, 1897; THÉRY (1074, 1076).—Algeria and Asia Minor, PIC (861).—Italy, BALBI (46); *Haliptidæ* and *Pelobidæ*, GRIFFINI, pp. 77 etc., Miscell. ent. v.—Sui Coleotteri della provincia di Roma, Fam. *Carabidæ*, ALESSANDRINI, Boll. Soc. Rom. Zool. vi, pp. 36–50, 128–139.—Sicily, *Polyphylla*, RINAPOLI, p. 253, Bull. Soc. ent. France, 1897.—Pola, KEISCHBERG (592).—Balkans, APFELBECK (24).—Servia, SCHULTZE (982).—Bosnia, GANGLBAUER (392).—Greece, FLEISCHER (340), REITTER (912, p. 222).—ESCHERICH (299, 301), SCHWARZ (990).—Armenia, REITTER (915).—Syria, PIC (848), REITTER (898, 908).—Jericho, WEISE (1183).—Syria and Greece, *Anobiidæ*, ZOUFAL (1202).—PIC, Persia and Asia Minor (847).

*Hymenoptera*. EMERY (288), DE-STEFANI (240), DUCKE (270), FRIESE (364, 366, 367), PÉREZ (827).—Spain, CABRERA (162), FOREL (350), VACHAL (1113), MEDINA, pp. 102–106, Act. Soc. Espan. 1896, and t. c. pp. 191 & 192.—Algeria, PIC (852).—Egypt, KOHL (600), MORICE (775).—Italy, COSTA (220), EMERY (294).—Balkans, APFELBECK (24).—Asia Minor, ESCHERICH (301), EMERY, Ants (301).—Smyrna, KIEFFER (576).

*Lepidoptera*. Aragon, NICHOLL (427).—N. Africa, STAUDINGER (1053).—Algeria, JOANNIS (553).—Sicily, *Rhopalocera*, FOUNTAINE, pp. 4-11, Entomologist, 1897.—Bericht über die auf der Halbinsel Sabioncello gesammelten *Macro-Lepidopteren*, WERNER, pp. 521-526, Wiss. Mitt. Bosnien, v.—Crimea, MELIORANSKY, pp. 216-239, Horæ Soc. ent. Ross. xxxi.—Asia Minor, HOFMANN (489).—Taurus, RÖBER (938).—Syria, KALCHBERG (561).—Syria, *Geometridæ*, WARREN (1149).—Palestine, STAUDINGER (1054).

*Diptera*. Italy, KUNTZE (645).—Pavia, CORTI (219).—Sicily, BEZZI & DE-STEFANI (75).—Greece, GIRSCHNER (413).—Tunis, MARCHAL (711).

*Hemiptera*. Portugal, BOLIVAR, pp. 73 & 74, Act. Soc. Espan. 1897.—Spain, FUENTE, pp. 202-204, Act. Soc. Espan. 1897; HORVÁTH (505).—Seville, BARRAS, p. 176, Act. Soc. Espan. 1897.—Algeria and Tunis, MONTANDON (763).—Algeria, *Coccidæ*, NEWSTEAD (782).—Piedmont, NOELLI (789-791).—Dalmatia, *Homoptera*, MELICHAR (737).—Asia Minor, ESCHERICH, pp. 124-127, Ent. Nachr. xxiii.—Amasia, REUTER (922).

*Neuroptera*. Corsica, *Trichoptera*, RIS, Mt. Schweiz. ent. ix, p. 438.—Algeria, *Odonata*, McLACHLAN, pp. 152-157, Ent. Mag. xxxiii.—Rimini, *Odonata*, BENTIVOGLIO, pp. 146-148, Atti Soc. Modena, xxix.—*Odonata* of Verona, GARBINI (393).

*Orthoptera*. Iberian penins., BOLIVAR (95).—Spain, BOLIVAR (98).—N. Africa, FINOT (337).—Nuove aggiunte agli *Ortotteri* della provincia di Roma, Bull. Soc. Rom. Zool. vi, pp. 79-95.—Piedmont, *Tryxalidæ*, *Culoptenidæ*, *Tettigidæ*, GRIFFINI, pp. 20-22, etc. Miscell. ent. v.

(h.) *Caucasus and West and Central Asia*, including ARABIA  
[see also (a.) and (b.)]: for THIBET see 6.

*Coleoptera*. Caucasus, JAKOWLEW (542), PIC (844, 857), REITTER (911), SCHULTZE (984), SEMENOW (1002).—Transcaucasus, JACOBSON (531).—Asia, JAKOWLEFF (544), REITTER (913, 919).—Russian Turkestan, Tschitschérine (1098).—Centr. Asia, JAKOWLEW (540), REITTER (904).—Altai, PIC (865).—Aden, THOMAS (1081).—Mascot, RÉGIMBART (895).—Persia, BRENSKE, Ent. Zeit. Stettin, lviii, p. 115.—Beluchistan, BRENSKE (129).

*Hymenoptera*. W. Asia, MORAWITZ (773).

*Lepidoptera*. Central Asia, ALPHÉRAKY (16), STAUDINGER (1056); *Geometridæ*, WARREN (1151, p. 389); *Geometrid.* Merv, WARREN, Nov. Zool. iv, p. 214.—Persia, AUSTAUT (41).

*Odonata*. Centr. Asia, RIS (928).

*Orthoptera*. Transcaucasus, RODZIANKO (940).—W. Asia, BRANCSIK (123).—Persian Gulf, BURR, Entomologist, 1897, pp. 187-189.

*Aptera*. Mascot, *Thysanura*, BOUVIER (120).

4. AFRICA (TROPICAL AND SOUTH; for NORTH AFRICA, see  
3 (g.); for COMORO Is., see 5).

*Insecta*. JOHNSTON (555), SMITH (1028).

*Coleoptera*. AURIVILLIUS (39), BOILEAU (88), BRANCSIK (124), BRENSKE (128, 130), Transvaal *Cetonides*, DISTANT (248), FAIRMAIRE (306, 307), FAUST (318), FLEUTIAUX (343), GESTRO (400), GORHAM (419), GRIFFINI (424), HARTMANN (461, 462), HINTZ (485), HORN (479, 499, 500, 502, 503), JACOBY (533), KERREMANS (569), KOLBE (601, 602, 603, 604, 605), KRAATZ (621-628, 629, 630, 633, 634, 636), LEWIS (680, 681), OERTZEN (798), D'ORBIGNY (800), PIC (840, 841, 853, 856, 858, 861), RAFFRAY (887, 888), SCHAUFUSS (961, 962); SCHOCH, *Cetonides* (975); *Coprides*, SHIPP (1013); THÉRY (1073), THOMAS (1082), WASMANN (1164, 1168, 1168a), WATERHOUSE (1171), WEISE (1179, 1180, 1182).



*Hymenoptera.* ANDRÉ (22), BUYSSON (151), CAMERON (156), EMERY, Somaliland (293), FOREL (349), GRIBODO (423), STADELMANN & LUCAS (1049), VACHAL (1112).

*Lepidoptera.* AURIVILLIUS (38), BUTLER (145, 148, 149, 150).—Somaliland, BUTLER, pp. 923-925, P. Zool. Soc. London, 1897.—DISTANT, Transvaal; *Sphingidae* (249), *Zygaenidae*, *Pyralidae* (250), *Bombyces* (252), *Saturniidae* (254).—HAMPTON (451, 453); *Xanthospilopteryx*, HOLLAND (491); KARSCH, Usambara (564); MABILLE (701), MARSHALL (719), OBERTHÜR (796).—ROTHSCHILD (950).—ROTHSCHILD, *Nymphalidae*, *Saturniidae*, *Agaristidae* (947); *Saturniidae*, *Agaristidae* (948); *Rhopalocera* (949).—SCHAUS (964).—SHARPE, *Acraeidae* (1010); Suakim, SHARPE, pp. 775-777, P. Zool. Soc. London, 1897.—STAUDINGER (1056), WALSHINGHAM (1141), WARREN (1149, 1150), WEYMER (1185).

*Diptera.* WANDOLLECK (1144).

*Hemiptera.* BREDDIN, *Heter.* (126); DISTANT, *Homoptera* (246); GIARD *Coccidae* (406); KIRKALDY, *Notonectidae* (589); MASKELL, *Coccidae* (722); MONTANDON, *Heteroptera* (760, 767, 769).

*Neuroptera.* FÖRSTER, *Odonata* (355); HAVILAND, *Termitidae* (463); KOLBE (601); SJÖSTEDT, *Termitidae* (1017, 1018, 1019); WASMANN (1153).

*Orthoptera.* BRANCSIK (122, 123), BRONGNIART (135), GRIFFINI (425).

## 5. MADAGASCAR, including SEYCHELLES and MASCARENE IS.

*Insecta.* Seychelles, Aldabra, &c. LINELL (686).

*Coleoptera.* ALLUAUD (12, 13, 15).—ALLUAUD, Mascarene islds. and Seychelles (14).—BRANCSIK (124), BRENSKE (128), HORN (500), FAIRMAIRE (305), FAUST (322), FLEUTIAUX (343), JACOBY (533), LESNE (677), RAFFRAY (888, 889).—RÉGIMBART, Seychelles and Mauritius (896).—Seychelles and Madagascar, SCHAUFUSS (962).—SCHOCH (975).—THÉRY, Seychelles (1073, 1075).—WASMANN (1165).

*Hymenoptera.* FOREL (349), WASMANN (1162).

*Lepidoptera.* HAMPTON (451, 453), MABILLE (701).—OBERTHÜR, Madagascar and Comoro (796).—WARREN (1149).—Madagascar and Mauritius, WARREN (1150).—Réunion, *Sesamia*, GIARD, p. 30, Bull. Soc. ent. France, 1897.

*Hemiptera.* BERGROTH (69).—DISTANT, *Pacilopsaltria* (247).—MARTIN (721), MONTANDON (760, 767, 768, 769).—*Coccidae*, NEWSTEAD (783).

*Neuroptera.* WASMANN (1153).

*Orthoptera.* BRANCSIK, Nossi-Bé (122).—BRANCSIK (123), BRONGNIART (134, 135), RODZIANKO (940).

## 6. TROPICAL AND EASTERN ASIA, WITH JAPAN.

For outskirts see also 3 (a.), (g.), (h.). ARABIA, see 3 (h.).

*Coleoptera.* AURIVILLIUS, India (39).—BRENSKE (128, 130), FAIRMAIRE (308).—FAIRMAIRE, China and E. Tibet (309); FAUST (323).—FAUST, China (319).—FAUST, India (321).—FAUVEL, Tonkin (325).—FAUVEL, Cambodia (328).—FLEUTIAUX, India (343, 345).—GAHAN (390); GESTRO (398); GORHAM (419); GROUVELLE (441).—HELLER, India (471).—HORN, Burma (496).—HORN, India (502).—JACOBY, India (536).—INDIA, KERREMAN'S (570).—KRAATZ (627, 628).—KRAATZ, India (631).—LESNE, India (671, 672).—LESNE, Cochin China (673).—LÉVEILLÉ, Malacca (679).—D'ORBIGNY (800).—PIC, India (861, 862).—PIC, Burma (843, 864).—PIC, Obock (853).—PIC, Ceylon (859).—PLANET, Tibet and India (871).—RAFFRAY (888).—REITTER, Bukhara (914, 917).—Bukhara, Afghanistan, REITTER (902).—RITSEMA, Cochin China (930).—RITSEMA, India, Burma, Malacca (931).—ROESCHKE,

China (944).—SCHAUFUSS (961).—SCHILSKY, China (968).—SCHOCH, Ceylon (975).—Supplement to Catalogue, Japan, SCHOENFELDT (976).—SEMENOW, E. Asia and Japan (1001).—TSCHITSCHÉRINE (1097).—TSCHITSCHÉRINE, China (1096).—VAULOGER, India, Bukhara (1118).—WASMANN, Burma (1159).—WATERHOUSE, China (1172).—WEISE, India, etc. (1179).

*Hymenoptera.* The *Hymenoptera aculeata* of British India, BINGHAM (78).—CAMERON (154); EMERY (287).—EMERY, India (288).—KONOW, Burma (610).—KONOW, Japan (617).—KONOW, Japan and Sikkim (618).—MAYR, Ceylon and Singapore (732).—VACHAL (1112).

*Lepidoptera.* ALPHÉRAKY, China (Sé-Tchouen and Kham) (17).—ALPHÉRAKY, Korea and Amur (18).—ALPHÉRAKY, China and Mongolia (20).—BETHUNE-BAKER, Perak (73).—DAVIDSON, BELL, & AITKEN, Canara, Bombay (232).—DUDGEON, Sikkim and Bhutan, Catalogue of moths (271).—ELWES & EDWARDS (286).—FAWCETT, Burma (329).—HAMPSON (451, 453).—HAMPSON, India (450).—LEECH, China, Japan and Corea (664).—MACKINNON & DE NICÉVILLE, Mussoorie (703).—MOORE, India (772).—NICÉVILLE (784).—OBERTHÜR, China (795).—OBERTHÜR, Tonkin (796).—OBERTHÜR, Yunnan (802).—PÜNGELER, Japan (884).—ELWES, Ladak *Colias*, p. 465, J. Bombay Soc. xi.—SWINHOE (1067).—SWINHOE, India (1068).—WATSON, Burma (1173).—WARREN (1149, 1150, 1151).

*Diptera.* KERTÉSZ, Assam (573).—ORMEROD, India (804).—WULF, Ceylon (1196).

*Hemiptera.* BUCKTON, India, *Aphididae* (139).—COCKERELL, Japan, *Coccidae* (189, 193).—COOLEY, Japan, *Coccidae* (217).—DISTANT, Burma, *Cicadidae* (251).—HANDLIRSCH (454).—KIRKALDY, China, *Notonectidae* (589).—MASKELL, Japan, China, India, etc. *Coccidae* (722).—MASKELL, Japan and China, *Coccidae* (723).—MASKELL, India, *Aphididae* (724).—MONTANDON (760, 769).—MONTANDON, Burma (766).—MONTANDON, India and Ceylon (767).—MONTANDON, Tibet (760).—NEWSTEAD, India, *Coccida* (783).—SHARP, Burma (1008).

*Neuroptera.* HAVILAND, *Termitidae* (463).—McLACHLAN, China? *Odonata* (704).—SELYS (1000).—SELYS, Japan (1000).

*Orthoptera.* BOLIVAR, Burma (94).—BOLIVAR, India (93).—BRONGNIART, Siam (135).—GRIFFINI, Perak (426, 427) and Miscell. ent. v, p. 139.

## 7. ASIATIC ARCHIPELAGO, including PAPUA.

*Insecta. Col., Hym., Dipt.* HEYDEN (477).

*Coleoptera.* AURIVILLIUS, Borneo, Palawan (39).—BOILEAU, Borneo (88, 90).—BOILEAU, Sumatra (89).—BRENSKE (128, 130); FAIRMAIRE (308, 310).—FAIRMAIRE, Sumatra (311).—FAUST (320, 323).—FAUST, Celebes (317).—FLEUTIAUX (346).—FLEUTIAUX, Sumatra, Philippines (343).—GAHAN (390).—Sumatra, GESTRO (401); GESTRO, catalogue of *Hispidae* (398).—Sumatra, *Hispidae*, GESTRO, Notes Leyden Mus. xix, pp. 174–176. —GESTRO, Batu (399).—GESTRO, Java (402).—GESTRO, New Guinea (404).—GORHAM (419); GROUVELLE (441).—HARTMANN, Java (461).—HELLER (470, 471).—HELLER, Timor Laut and New Guinea (468).—HELLER, Celebes (467).—HELLER, Philippines (472).—HORN, Java (496).—HORN, Celebes (500).—JACOBY (535).—JAKOWLEW, Borneo, Mindoro (541).—JORDAN (557).—JORDAN, Batchian, New Guinea, *Anthribidae* (558).—KERREMANS, Bunguran Is. (569).—KOLBE, Lombok (604).—KRAATZ, Celebes (632).—KRAATZ, Sumatra and Nias (635).—LESNE (671).—LEWIS, Sumatra (681).—OLIVIER (799); PIC (846).—PIC, Borneo (859).—RAFFRAY (888).—RITSEMA, Java (932).—RITSEMA, Borneo (933).—RITSEMA, Sumatra (934).—RITSEMA, Sumatra, Borneo (935).—RITSEMA, Philippines (931).—RITSEMA, Sumatra, *Macroma*, p. 115, Notes Leyden Mus. xix.—RITSEMA, Sumatra, *Lucanida*, Notes Leyden Mus. xix, p. 234.—SCHAUFUSS, Philippines (962).—SCHOCH,

Sumbava and Borneo (974).—SENNA, Celebes (1004).—SENNA, Batu (1006).—THÉRY (1073).—VEEN, Java (1120, 1122).—WEISE (1179).

*Hymenoptera.* New Guinea, BIR6 (76).—CAMERON, Borneo (154).—EMERY (287, 292).—EMERY, New Guinea, Lombok (290).—KONOW, Borneo (611).—VACHAL (1112).

*Lepidoptera.* BETHUNE-BAKER, Sanger (73).—BUTLER, Sumatra (146).—BUTLER, Borneo (144).—New Guinea, DANNATT (231).—H. H. DRUCE (267); ELWES & EDWARDS (286).—FAWCETT, Sumatra (329).—FRUHSTORFER (377, 380, 382, 385).—FRUHSTORFER, Java (379).—FRUHSTORFER, Borneo (376).—Lombok, FRUHSTORFER (375, 378) and *Miscell. ent.* v, p. 105.—HAGEN, New Guinea and New Pomerania (447).—HAMPSON (451, 452, 453).—KIRBY, Sumatra (587), v, p. 239.—MEYRICK (748); NICÉVILLE (784).—NICÉVILLE, Java, pp. 127 & 128, *Berlin. ent. Zeitschr.* 1897.—NICÉVILLE, Bali (785).—NICÉVILLE, New Guinea (786).—PAGENSTECHER (817).—RÖBER, Java (936).—ROBER, Celebes and Java (937).—ROTHSCHILD (948).—ROTHSCHILD, Borneo, New Guinea (949).—ROTHSCHILD, Celebes (947).—SMITH, New Guinea (1029, 1030, 1031, 1032).—SMITH, Celebes, New Guinea (1033).—SMITH & KIRBY (1034).—SNELLEN, Java (1040, 1041, 1042).—SWINHÖE, Gilolo and Borneo (1067).—SWINHÖE, Sumba, Batchian (1068).—Nias Island, THIEME (1077).—THIERRY-MIEG, Batchian (1078).—VEEN, Java (1122).—WARREN (1149, 1150, 1151).

*Diptera.* ADENSAMER, Java (7).—KERTÉSZ, New Guinea (572).—WANDOLLECK, Sumatra (1144, 1146).—WULF, Java (1197).

*Hemiptera.* DISTANT, New Guinea (244).—DISTANT, Mentawai island (245).—DISTANT, Lombok, Celebes (253).—HANDLIRSCH, Borneo and Sumatra (454).—MONTANDON, Borneo (769).—New Guinea, MONTANDON (760, 768).—MONTANDON, Borneo, Sumatra, New Guinea (767).

*Neuroptera.* CARPENTER, New Guinea, *Odonata* (159).—FÖRSTER, Borneo, *Odonata* (354).—FÖRSTER, Borneo and New Guinea, *Odonata* (357).—FÖRSTER, Key and Lombok, *Odonata* (356).—HAVILAND, *Termitidae* (463).

*Orthoptera.* BOLIVAR, Philippines (97).—BRANCSIK, New Guinea (123).—BRONGNIART (134); BURR (141).

## 8. AUSTRALIA AND TASMANIA.

*Coleoptera.* AURIVILLIUS (39); BLACKBURN (79, 80, 81); FLEUTIAUX (343); LEWIS (681); GROUVELLE, Australia and Tasmania (441); LEA (660, 661); LESNE (676); PIC (854, 855); SENNA (1005); SHIPP (1012); SLOANE (1026, 1027).

*Hymenoptera.* EMERY (292); MANTERO (706); TURNER (1101).

*Lepidoptera.* Catalogue of Victorian *Lepidoptera*, continued, LOWER, Victorian Naturalist, xiii, xiv.—BUTLER (146); HAMPSON (451, 453); KERSHAW (571); LOWER (691, 692, 693); MEYRICK (747, 749); ROTHSCCHILD (948); TURNER (1100); N. S. Wales, *Heteronympha*, WATERHOUSE, pp. 240–243, P. Linn. Soc. N. S. Wales xxii.—WARREN (1149, 1150, 1151).

*Diptera.* FROGGATT (373).

*Hemiptera.* FROGGATT, *Coccidae* (372); FULLER, *Coccidae* (387); KIRKALDY (589); MARTIN (720); MASKELL, *Coccidae* (722); SCHWARZ (988).

*Neuroptera.* FROGGATT (370); SELYS, *Odonata* (1000); *Chrysopa*, McLACHLAN, p. 157, *Ent. Mag.* xxxiii.

*Orthoptera.* BRANCSIK (122, 123); BRONGNIART (134, 135); RAINBOW (890, 891).

## 9. NORTH AMERICA.

*Insecta.* GODMAN & SALVIN (416).—Myrmecophilous Insects, and ants, Toronto, KING (582).—Ottawa, introduced species, etc. Ottawa Natural.

xi, pp. 11-17.—Jackman, Maine, HARVEY & KNIGHT, p. 77, *Psyche*, viii.—Mt. Washington, Alpine, SLOSSON, pp. 237-240, *Ent. News Philad.* 1897.—Florida and Georgia, CASTLE & LAURENT, pp. 7-9, *Ent. News Philad.* 1897.—Bermuda, HURDIS (520).

*Coleoptera*. CASEY (162); DIETZ (241); FALL, S. California islands (316); HAYWARD (465); HUBBARD (517); KEEN, Queen Charlotte islands (565); LEWIS (681), LINELL (687, 688, 689), SCHWARZ (987), WASMANN (1166, 1169), WICKHAM, Canada (1187).—SCHWARZ, p. 52, *P. ent. Soc.* Washington, iv.—N. E. America, *Bembidium*, HAYWARD, J. N. York *Ent. Soc.* v, pp. 134-149.—Kansas *Lachnosterna*, KNAUS, pp. 214-217, *Ent. News Philad.* 1897.—N. Jersey salt meadows, WENZEL, p. 218, *Ent. News Philad.* 1897.—N. Idaho, WICKHAM, pp. 165-168, *Ent. News Philad.* 1897.—Washington County, EHRLMANN, pp. 168-170, *Ent. News Philad.* 1897.

*Hymenoptera*. ASHMEAD (25-33), COCKERELL (198-215), DAVIS (233, 234), DIMMOCK (243), DUNNING (272, 273, 274), DYAR (283), FOX (358, 361), HARRINGTON, Vancouver Island (459); HOWARD (510, 511, 512); KONOW (617), LEWIS (682), MACGILLIVRAY (702), ROBERTSON (939), VACHAL (1112).—Fauna ottawaensis, *Proctotrypide*, HARRINGTON, *Ottawa Natural.* x, pp. 217-219.

*Lepidoptera*. BARNES (53), BEUTENMULLER (74), FRENCH (362), HAMPSON (453), MURTFELDT (777), OTTOLENGUI (813), SKINNER (1020), SKINNER (1021), SNYDER (1045), STRECKER (1064), HENSHAW, *Science*, v, p. 845.—Franklin, *Rhopalocera*, BELL, p. 143, *Psyche*, viii.—Cleveland, Ohio, *Rhopalocera*, BUBNA, pp. 97-99, *Ent. News Philad.* 1897.—S. Dakota, TRUMAN, pp. 27-29, *Ent. News Philad.* 1897.—New Jersey, DYAR, p. 96, J. N. York *ent. Soc.* v.—New Brunswick, *Argynnis idalia*, FLETCHER, p. 93, *Canad. Ent. xxix.*—Canada, *Noctuidæ*, WINN, p. 99, *Ent. News Philad.* 1897.—Riverside, California, *Rhopalocera*, TWOGOOD, pp. 29-32, *Ent. News Philad.* 1897.—Moffat, *Sphinx luscitiosa*, *Canad. Ent. xxix*, p. 224.—Canada, at electric light, MOFFAT, pp. 177 & 178, *Canad. Ent. xxix.*—Red river, HANHAM, p. 3, *Canad. Ent. xxix.*—List of Manitoba moths, HANHAM, pp. 291-297, *Canad. Ent. xxix.*

*Diptera*. BROWN (136).—COQUILLETT (153, 218); Alaska and U. S. HUNTER (519); JOHNSON (554), KAHL (560), KINCAID (581), PATTON (821), SLINGERLAND (1025), TOWNSEND (1086, 1090).—New Mexico, TOWNSEND, pp. 126, 138, *Psyche*, viii, and *t. c.* pp. 147-150.—WHEELER (1186).—N. York *Syrphidæ*, BANKS, p. 40, J. N. York *Ent. Soc.* v.—*Simulium*, COCKERELL, p. 100, *Ent. News Philad.* 1897.—Localities for *Syrphidæ*, WESTCOTT, pp. 190 & 191, *Ent. News Philad.* 1897.

*Hemiptera*. ASHMEAD, Canada (35); BAKER (43, 44, 45), BALL (47), BERGROTH (68), COCKERELL, *Coccidæ* (189-191, 194, 196, 197, 198).—COCKERELL, *Aleurodes* (188, 188A).—COOLEY, *Coccidæ* (217).—HANDLIRSCH (454).—KING, *Coccidæ* (583).—KING & COCKERELL, *Coccidæ* (585).—KIRKALDY (589), KIRKLAND (591), MONTANDON (768), OSBORN (807), OSBORN & BALL (806), UHLER (1107).—Ohio, *Cicada septendecim*, WEBSTER (1177).—Sangre de Cristo mountains, *Aphididæ*, COCKERELL, pp. 201 & 202, *Ent. News Philad.* 1897.—Colorado, BAKER, pp. 53 & 54, *Ent. News Philad.* 1897.

*Neuroptera*. BANKS (48, 49, 50).—NEEDHAM, *Odonata* (780).—Buffalo, *Odonata*, VAN DUZEE, pp. 87-91, J. N. York *Ent. Soc.* v.—New York State, *Odonata*, CALVERT, pp. 91-95, J. N. York *Ent. Soc.* v.—CHAPMAN, *Mallophaga* (165).

*Thysanoptera*. BEACH (58), OSBORN (805).

*Orthoptera*. MORSE (776).—PIERS, Nova Scotia (869).—SCUDDER (993, 995, 996).—Iowa, BALL, *P. Ac. Iowa*, iv, pp. 234-241.—Canada, *Gryllidæ*, LOCKHEAD, pp. 39-44, *Rep. ent. Soc. Ontario*, xxviii.—Canada, *Schistocerca americana*, WALKER, p. 89, *Canad. Ent. xxix.*—Greenhouse *Orthoptera*, SCUDDER, p. 71, *Psyche*, viii.

*Aptera*. BANKS, *Smynturus* (51).—COQUILLETT (153), SCHÖTT (977).

## 10. CENTRAL AMERICA. (MEXICO to PANAMA incl.)

*Insecta.* GODMAN & SALVIN (416), TRISTAN, Costa Rica (1094).—Costa Rica, *Coleoptera*, *Hemiptera*, *Orthoptera*, *Hymenoptera*, *Lepidoptera*, TRISTAN, *Informes Mus. Nac. Costa Rica*, 1896, pp. 9–19.

*Coleoptera.* CASEY (162), FLEUTIAUX (343), GROUVELLE (440), HORN (498), KERREMANS (567), KUWERT (646), LESNE (675), PIC (858, 863), RAFFRAY (888), SENNA (1005), WASMANN (1170).

*Hymenoptera.* CAMERON (155), COCKERELL (200, 201, 208), MOCSÁRY (756).

*Lepidoptera.* GODMAN & SALVIN (415), DRUCE (266), OBERTHÜR (796), SCHAUS (963), WARREN (1152).—PITTIER & BLOLEY, Costa Rica (870).

*Diptera.* TOWNSEND (1085, 1086, 1088).

*Hemiptera.* BAKER (45), COCKERELL, *Coccidæ* (195), HANDLIRSCH (454), MONTANDON (764, 768, 770), TOWNSEND, *Coccidæ* (1091), UHLER (1107).

*Neuroptera.* *Odonata*, CARPENTER (159).

*Orthoptera.* FINOT (336), GIGLIO-TOS (411).

*Aptera.* SCHÖTT (977).

## 11. ANTILLES.

GODMAN & SALVIN (416), HOWARD (509), Bermudas, HURDIS (520).

*Coleoptera.* CHAMPION (164), FLEUTIAUX, Cuba (343); GROUVELLE (440), JACOBY (534), KERREMANS (567), LEWIS, Grenada (681).

*Hymenoptera.* FOREL, Grenada (352).

*Lepidoptera.* HAMPSON (452, 453), WALSINGHAM (1139), WARREN (1152).—*St Lucia Geometridæ*, SCHAUS, *J. N. York Ent. Soc.* v, p. 165.

*Diptera.* WILLISTON (1193).

*Hemiptera.* GIARD, *Coccidæ* (405); HANDLIRSCH (454); UHLER, Cuba (1107).

*Orthoptera.* FINOT (336).

## 12. SOUTH AMERICA, incl. TRINIDAD.

*Insecta.* GODMAN & SALVIN (416).

*Coleoptera.* AURIVILLIUS (39), BELON, *Lepturid* (64, 65).—BELON, Chili (63).—BOILEAU (91), FLEUTIAUX (343).—GOELDI, Pará (417).—GROUVELLE (439, 440), HELLER (469), HORN (499, 500, 501), JACOBY (537, 538), JORDAN (558), KERREMANS (567), LEWIS (680), PIC (855, 858), RAFFRAY (888), SCHAUFUSS (961), SENNA (1005), SHIPP (1013), THÉRY (1073).

*Hymenoptera.* ASHMEAD (32), FOX (359, 360), KONOW (607, 611), LUCAS (694, 695, 696), MOCSÁRY (756).

*Lepidoptera.* BERG (67), BUTLER (147), DOGNIN (258, 259, 260), DRUCE (266), FRUHSTORFER (383), GODMAN & SALVIN (415), HAMPSON (451, 452, 453), MABILLE (701), SCHAUS (963), SMITH & KIRBY, incl. Trinidad (1034). STAUDINGER (1051, 1056), WARREN, incl. Trinidad (1152), ROTHSCHILD (948, 949).—SEITZ, Argentina, pp. 73, etc. *Soc. ent.* xii.

*Diptera.* WANDOLLECK (1143), WILLISTON (1193).

*Hemiptera.* BAKER (42, 45); BREDDIN, Patagonia (127); GIARD, Chili, *Coccidæ* (408); HANDLIRSCH (454), MONTANDON (761, 762, 764, 765, 768, 769, 770).

*Neuroptera.* Amazons, *Odonata*, KIRBY (586).

*Orthoptera.* BOLIVAR (96).—Patagonia, Paraguay, etc. BRANCOSIK (123).—BURR (141).—FINOT (336); GIGLIO-TOS (412).—List of *Forficulidæ* of S. America, FINOT, *Act. Soc. Chili*, vi, pp. 3–10.

*Aptera.* Chili and Patagonia, SCHÄFFER (959).

## PALÆO-ENTOMOLOGY.

Notes on Silurian Insect forms in New Brunswick, MATTHEW (726).

Observations on, with figures, the fossil *Neuroptera*, *Orthoptera*, *Hemiptera*, *Coleoptera* and *Hymenoptera* of the Teyler Museum, with special reference to the determinations of Weyenbergh, MEUNIER (744).

Brongniart's discoveries, SAJOHELYI (955).

*Hymenoptera*. KONOW (608).

*Tenthredo vetusta* Heer referred to *Taxonus*, KONOW, p. 36, Ent. Nachr. xxiii.

*Electrocephus*, n. g., p. 37, for *E. stralendorffi*, n. sp. Dantzig amber, p. 38, KONOW, Ent. Nachr. xxiii.

*Pimpla antiqua* note on, MEUNIER, p. 277, Ann. Soc. Bruxelles, xx.

*Diptera*. Notes on mesozoic, MEUNIER (743).

Review of Tertiary fossil *Diptera*, MEUNIER (740).

*Palæompalia*, n. g. for a fossil *Mycetophilid*, MEUNIER, p. 218, Bull. Soc. ent. France, 1897.

*Palæomedeterus*, n. g. for a *Dolichopid* from tertiary amber, MEUNIER, p. 174, Ann. Soc. Bruxelles, xix.

*Neuroptera*. *Hylæoneura lignei*, a Sialid from the Wealden of Bernisart; also a larva allied to *Mormolucoides articulatus*, LAMEERE & SEVERIN, pp. 35-38, Ann. Soc. ent. Belgique, xli.

*Aptera*. *Geracus* (? n. g.) *tubifer*, Silurian of New Brunswick, MATTHEW, p. 55, Bull. Soc. N. Brunswick, xv, n. sp.

## III. SYSTEMATIC.

N.B.—The reference-numbers collected under the headings of the various groups refer to "Titles" on pp. 4-62, and are intended to give, in each case, a complete list of all memoirs containing anything of importance in connection with the group.

The orders and phylogeny of Insects, SMITH (1035).

Colour as pattern and design: plates dealing with all the Orders, BRUNNER (138), BLES (87).

The maxilla of Insects, CHATIN (169).

Occurrence of black pigment in Insects, VERHOEFF (1124).

Hybridisation in Insects, ACKERMANN (5).

List of insects attacked by *Laboulbeniaceæ*, LINDAU, pp. 225-229, Ent. Nachr. xxiii.

## (A.) COLEOPTERA.

Structure of the elytra, VERHOEFF (1126).

The process of coloration in pupa and imago, VERHOEFF (1127).

Parasites (internal) of adult *Coleoptera*, CHITTENDEN (170).

Defence by exudation of fluid, CUÉNOT (223, 224).

## CICINDELIDÆ.

[The following titles relate to *Cicindelidæ*, viz., CASEY (162), FAIRMAIRE (305, 306), FLEUTIAUX (345), HELLER (467), HORN (496-503), KOLBE (601), LEE (660), SLOANE (1026).]

- List of *Cicindelidae* of Java with critical and synonymical remarks, HORN, Deutsche ent. Zeitschr. 1897, pp. 49–60.
- Revision of Mexican *Cicindelidae*, HORN (498).
- For synonymy of Dokhtouroff's species see HORN, p. 62, Deutsche ent. Zeitschr. 1897.
- Beckerium*, n. g. for *Odontochila leptalis* Bates, HORN, p. 164, Deutsche ent. Zeitschr. 1897.
- Bennigsenium*, n. g., *Cicindelini*, for *B. planicorne*, n. sp. E. Africa, HORN, p. 61, *t. c.*
- B. horni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 347, n. sp.
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- C. togata*, var. n. *apicalis*, HORN, p. 17, Ent. Nachr. xxiii. *C. hybrida*, var. n. *reitteri*, p. 253, *princeps*, var. n. *ducalis*, p. 254, HORN, Deutsche ent. Zeitschr. 1897. *C. speculifera*, var. n. *brevipennis*, HORN, p. 58, *t. c.* *C. scotina*, var. n. *chloris*, p. 168, *C. obsoleta*, var. n. *latemaculata*, *juvenilis*, p. 169, *C. rufiventris*, var. n. *beckeri*, *reducta*, *hoegeana*, p. 171, HORN, BECKER & HÖGE, Deutsche ent. Zeitschr. 1897.
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- Collyris bipartita*, India, FLEUTIAUX, p. 24, Bull. Soc. ent. France, 1897, n. sp.
- Cosmema kolbei*, Transvaal, HORN, p. 238, Ent. Nachr. xxiii; *C. discoidalis*, *helleri*, Transvaal, HORN, p. 237, Notes Leyden Mus. xix : n. spp.
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- Dromochorus sericeus*, Texas, *pruinus*, Kansas, CASEY, p. 294, Ann. N. York Ac. ix, n. spp.
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- Neolaphyra*: *ritchii*, *truquii*, *leucosticta* are one species, HORN, p. 20, Ent. Nachr. xxiii.
- Onus*; table of the species, CASEY, pp. 288 & 289, Ann. N. York Ac. ix.

- O. montanus, lugubris*, p. 290, *punctifrons, confluens*, p. 291, *sculptilis*, p. 292, *elongatus*, p. 293, California, *id. t. c. n. spp.*  
*Oxychila bolivari*, Bolivia, HORN, p. 239, Notes Leyden Mus. xix, n. sp.  
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## CARABIDÆ.

- [The following titles relate to *Carabidæ*, viz., ALLUAUD (12, 15), BEDEL & FRANÇOIS (62), BRANCSIK (124), CASEY (162), DIEZ (242), ESCHERICH (299), FAIRMAIRE (305, 308), FLEISCHER (340), GANGLBAUER (1205), GUILLÉBEAU (445), HAYWARD (465), KOLBE (601, 602, 605), LAPOUGE (651), LESNE (678), REITTER (898-900, 903, 905-908), ROESCHKE (944), SEMENOW (1001, 1003), SLOANE (1027), TSCHITSCHÉRINE (1096-1098), VAULOGER (1116, 1117), VORBRINGER (1135).]  
 Stridulating organs of *Siagona*, BEDEL & FRANÇOIS, Bull. Soc. ent. France, 1897, p. 38.  
 Critical remarks on Reitter's tables of *Carabini*, SEMENOW, pp. 504-540, Horæ Soc. ent. Ross. xxxi. Notes on Reitter's tables, BORN, pp. 97 etc., Soc. ent. xii. Notes on Reitter's tables, ROESCHKE, pp. 77-79, Ent. Nachr. xxiii. Remarks on the genera of palæarctic *Carabini*, in reply to observations of Roeschke and of Kraatz, REITTER, pp. 17-25, and 26-30, Deutsche ent. Zeitschr. 1897.  
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*Acathaicus*, discussed, SEMENOW, pp. 482-497, Horæ Soc. ent. Ross. xxxi.  
*Acrogeniodon*, n. g., p. 65, *Anisodactylides* for *A. bedeli*, n. sp., Mou-pin, p. 66, TSCHITSCHÉRINE, Abeille, xxix.  
*Agonum perprasinum*, Syria, REITTER, p. 45, Wien. ent. Zeit. xvi, n. sp.  
*Amara majuscula*, habitat and characters, p. 69, *A. tumida* (= *Harpalus simulans*, Sahlb.), p. 70, TSCHITSCHÉRINE, Abeille, xxix. *A. pumilio* (= *A. [Percosia] phoenix*, Tsch.), TSCHITSCHÉRINE, p. 30, t. c.  
*A.* (subg. n. *Cyclothorax*) for *A. harpaloides*, n. sp., Greece, FLEISCHER, p. 72, Wien. ent. Zeit. xvi; *A. (Triana) davidi*, Mou-pin, p. 67, *A. (Celia) vagans*, China, p. 68, TSCHITSCHÉRINE, Abeille, xxix : n. spp.  
*Amaroschesis*, n. g., p. 28, for *Amathitis yunnana*, and *Zabrus chinensis*, Fairm., with *A. delavayi*, n. sp., Yunnan, p. 29, TSCHITSCHÉRINE, Abeille, xxix.  
*A. davidi*, Mou-pin, TSCHITSCHÉRINE, p. 58, t. c., n. sp.  
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- C. marginalis*, *sponsa*, p. 340, *parviceps*, p. 341, *monticola*, p. 342, *arcuata*, p. 343, N. America, CASEY, Ann. N. York Ac. ix : n. spp.
- Carabus (Coptolabrus) smaragdinus*, variation, subsp. n. *chinganensis*, p. 320, *mandakuricus*, p. 324, *C. subformosus*, subsp. n. *spurius*, p. 331, *C. (Microplectes) argonautarum*, n. n. for *cupreus*, Chaud. pp. 388 & 394, *C. (Acathaicus) idolon*, n. n. for *potanini* Sem. p. 489, *C. koku-jewi*, n. n. for *C. fischeri* Reitt. p. 515, *C. arcanus*, n. n. for *C. (Plectes) concinnus*, Sem. p. 525, SEMENOW, Horæ Soc. ent. Ross. xxxi. *C. auratus*, var. n. *nicolasi*, CHABAUT, p. 25, Echange, 1897. *C. solieri*, var. n. *cyaneo-viridis*, CARRET, p. 38, Echange, 1897. *C. (Xystrocarabus) catenatus*, var. n. *fontanella*, REITTER, p. 203, Wien. ent. Zeit. xvi. *C. cavernosus*, var. *variolatus*, note on REITTER, p. 77, t. c. *C. deubeli*, note on REITTER, p. 242, Wien. ent. Zeit. xvi, and KRAATZ & REITTER, p. 283, t. c. *C. tibialis*, characters, ROESCHKE, p. 80, Deutsche ent. Zeitschr. 1897.
- C. (Plectes) jason*, p. 315, *olgae*, p. 317, Caucasus, *C. (Damaster) anurus*, Japan, p. 318, *C. (Coptolabrus) dux*, E. China, p. 325, *grumorum*, Gan-su, p. 327, *berezowskii*, with subsp. *sunpanensis*, W. China, p. 329, *C. (Archæocarabus* sect. n.) *relictus*, W. China, p. 337, *C. kukunorensis*, Gan-su, p. 342, *C. (Ophiocarabus) kozlowi*, p. 344, *præcox*, p. 347, Tjan-schan, *ascendens*, W. China, p. 349, *C. (Archæocarabus) sininensis*, Gan-su, p. 351, *indigestus*, W. China, p. 352, *C. (Tachycarabus* sect. n.) *poëta*, p. 357, *Korsakowi*, p. 361, *pusto*, p. 362, *C. (Hypsocarabus* sect. n.) *latro*, p. 367, W. China, *C. (Eccoptolabrus* subg. n.) *exiguus*, Se-tschuan, p. 400, *C. (Neoplesius) nanschancicus*, Kuku-nor, p. 416, *lama*, p. 418, *Kaschkarowi*, p. 423, *alpherakii*, p. 425, Se-tschuan, *C. (Pseudocranion) tiro*, Sunpan, p. 440, *fumigatus*, p. 442, *C. (Orato-cranion* sect. n.) *benjamini*, p. 445, *sackeni*, p. 448, Se-tschuan, *C.*

- (*Caloscehenus*) *sewertzowi*, Nan-schan Mts., p. 455, *C. (Cryptoscehenus* subg. n. p. 462) *sifanicus*, Se-tschuan, p. 465, *C. (Eotribax* subg. n.) *celus*, Bukhara, p. 522, SEMENOW, Horæ Soc. ent. Ross. xxxi; *C. tauricus*, *bessarabici*, var., Crimea, ROESCHKE, p. 79, Deutsche ent. Zeitschr. 1897; *C. (Mimocarabus)* *roseni*, N. Persia, REITTER, p. 121, Wien. ent. Zeit. xvi; *C. (Apostocarabus)* *chaffangoni*, Jakutsk, LÉSNE, p. 297, cut, Bull. Soc. ent. France, 1897; *C. (Coptolabrus)* *mesites*, Tibet, FAIRMAIRE, p. 210, Notes Leyden Mus. xix; *C. kolbei*, China, ROESCHKE, p. 116, Ent. Nachr. xxiii : n. spp.
- Carenides*: notes on various, SLOANE, pp. 190-229, P. Linn. Soc. N. S. Wales, xxii.
- Carenidium leai*, W. Australia, SLOANE, p. 223, t. c. n. sp.
- Carenum reflexum*, p. 194, *occidentale*, p. 195, *cordipenne*, p. 196, *froggatti*, p. 198, *sulcaticeps*, p. 199, *purpureum*, p. 201, *imitator*, p. 208, *ampli-colle*, p. 207, *versicolor*, p. 208, *opacicolle*, p. 209, *venustum*, p. 212, *acutipes*, p. 213, *pulchrum*, p. 215, Australia, SLOANE, t. c. : n. spp.
- Catombax*, subg. n., cf. *Eucamptognathus*.
- Cephalomorphus*, subg. n. of *Ophonus* for *O. capito*, Mor., TSCHITSCHÉRINE, p. 45, Abeille, xxix.
- Chlanius lyratus* = (*lateripictus*, Fairm.), BEDEL, p. 35, Abeille, xxix.
- Colpodes grandidieri*, p. 172, *solidus*, hova, p. 173, *coquereli*, p. 174, *antankara*, *simplex catati*, p. 175, *sylvaticus*, *mica-auri*, p. 176, *parenthesis*, *gemmula*, *inerincæ*, *fairmairei*, p. 177, *subimpressus*, *obtusidens*, *dirrhaphis*, p. 178, *radama*, *dieganus*, *blandus*, p. 179, *suturellus*, *sikorai*, *oberthuri*, p. 180, *perforatus variolosus*, p. 181, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897 : n. spp.
- Coptolabrinus*, subg. n. of *Carabus* for *C. pustulifer*, Luc., REITTER, p. 203, Wien. ent. Zeit. xvi.
- Cratocephalus*, discussion, SEMENOW, pp. 467-482, Horæ Soc. ent. Ross. xxxi.
- Cratocranion*, sect. n. of *Carabus*, q. v.
- Cryptoscehenus*, subg. n. of *Carabus*, q. v.
- Cyclosomus basalis*, Zambesi, KOLBE, p. 349, Ent. Nachr. xxiii, n. sp.
- Cyclothorax*, subg. n. of *Amara*, q. v.; cf. also *Euderocycla*.
- Cymindis bedeli*, Algeria, TSCHITSCHÉRINE, p. 21, Abeille, xxix; *C. (Psammoxenus)* *triangularis*, Thian-Schan, REITTER, p. 247, pl. iii, f. 2, Wien. ent. Zeit. xvi; *C. kilimana*, Africa, KOLBE, Deutsch-Ost-Afrika, lv, Col. p. 51 : n. spp.
- Dioryche seriata*, E. Africa, KOLBE, p. 79, Mt. Mus. Hamburg, xiv, n. sp.
- Diplochila alternans*, p. 347, *cliens*, *nupera*, p. 348, N. America, CASEY, Ann. N. York Ac. vi : n. spp.
- Drimostoma basale*, p. 165, *ovum*, p. 166, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897 : n. spp.
- Dromius opacicolor*, Syria, REITTER, p. 30, Deutsche ent. Zeitschr. 1897, n. sp.
- Drypta cyanicollis*, p. 93, *quadrispina*, p. 94, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *D. perrieri*, *waterhousei*, FAIRMAIRE, p. 365, t. c. : n. spp.
- Dyschirius gibbicollis*, Madagascar, FAIRMAIRE, p. 367, Ann. Soc. ent. Belgique, xli, n. sp.
- Ecooptolabrus*, subg. n. of *Carabus*, q. v.
- Ecooptoptera adonia*, E. Africa, KOLBE, p. 76, Mt. Mus. Hamburg, xiv, n. sp.
- Elaphrus (Elaphroterus) tschitscherini*, Caucasus, SEMENOW, p. 595, Horæ Soc. ent. Ross. xxxi; *E. politus*, California, CASEY, p. 345, Ann. N. York Ac. vi : n. spp.
- Eocarabus*, subg. n. for *Coptolabrus jankowskii*, Oberth., SEMENOW, p. 403, Horæ Soc. ent. Ross. xxxi.

- Eotribax*, subg. n. of *Carabus* for *C. eous*, etc. SEMENOW, p. 520, Horæ Soc. ent. Ross. xxxi.
- Eucamptognathus prasinus*, p. 166, *E. (Catomabax subg. n.) dieganus*, p. 167, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897 : n. spp.
- Eucoptolabrus*, sect. n. of *Coptolabrus* for *gemmifer* and *pustulifer*, SEMENOW, p. 336, Horæ Soc. ent. Ross. xxxi.
- Euderocycla*, n. n. to replace *Cyclothorax*, Fleischer supra, and *fleischeri* n. n. for *harpaloides* Fl., TSCHITSCHÉRINE, p. 30, Abeille, xxix.
- Eunema*, subg. n., cf. *Feronia*.
- Eupachycechenus*, subg. n. of *Carabus* for *C. rifensis* Fairm., SEMENOW, p. 512, Horæ Soc. ent. Ross. xxxi.
- Eurydera femorata* (= *obscurata* Fairm.), FAIRMAIRE, p. 97, Ann. Soc. ent. Belgique, xli.
- E. stellulata*, Madagascar, *id. l. c.*, n. sp.
- Eustuhlmannium*, n. n. for *Stuhlmannium* K. *E. mirabile*, figure, pl. 1, fig. 2, KOLBE, p. 65, Deutsch-Ost-Afrika, Col. iv.
- Eutoma gratiosum*, p. 217, *aberrans*, p. 218, Australia, SLOANE, P. Linn. Soc. N. S. Wales, xxii, n. spp.
- Eutrichopus*, n. g. for *Feronia canariensis* Br., TSCHITSCHÉRINE, Abeille, xxix, p. 32.
- Feronia lissodera*, synonymy, p. 30, *F. nitens* var. n. *warentzowi*, p. 32, TSCHITSCHÉRINE, Abeille, xxix. *F. festiva* and *kamberskyi* are synonyms, TSCHITSCHÉRINE, p. 74, t. c.
- F. (Eunema, subg. n.)* for *F. filum*, p. 70, Mou-pin, *F. (Pterostichus) davidi*, Yunnan, p. 71, *F. (Pseudopedius) ægyptius*, Egypt, p. 73, TSCHITSCHÉRINE, Abeille, xxix : n. spp.
- Galerita bicolor*, varr. n. *obliqua intermedia*, CASEY, p. 350, Ann. N. York Ac. ix.
- G. thoracica*, Florida, *infirmata*, Arizona, CASEY, p. 350, t. c., n. spp.
- Glycia rugicollis*, Madagascar, FAIRMAIRE, p. 366, Ann. Soc. ent. Belgique, xli, n. sp.
- Graphipterus lineellus*, Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 59, n. sp.
- Haplocarabus*, sect. n. of *Carabus* for *C. confinis* Sem., SEMENOW, p. 536, Horæ Soc. ent. Ross. xxxi.
- Harpalus metallinus*, and allies, synonymy and distinctions, TSCHITSCHÉRINE, p. 25, Abeille, xxix.
- H. triseriatus*, Thessaly, FLEISCHER, p. 73, Wien. ent. Zeit. xvi; *H. errans*, p. 77, *maurus*, p. 78, *plebeius*, p. 79, Turkestan, TSCHITSCHÉRINE, Abeille, xxix; *H. pewartzowi*, Centr. Asia, p. 49, *davidi*, p. 51, *misellus*, p. 53, Pekin, *bouvieri*, p. 54, *pauper*, p. 55, *consors*, *vicinus*, p. 56, *miser*, p. 57, Mou-pin, TSCHITSCHÉRINE, t. c.; *H. plancyi*, Peking, p. 22, *trichophorus*, Asia minor, p. 24, *polychromus*, p. 26, *raddet*, p. 27, Transcaucasus, TSCHITSCHÉRINE, t. c.; *H. (Hypolithus) xanthocnemis*, Madagascar, ALLUAUD, p. 169, Ann. Soc. ent. France, 1897 : n. spp.
- Hemitelestus, hova*, Madagascar, ALLUAUD, p. 165, Ann. Soc. ent. France, 1897, n. sp.
- Hypolithus magnicollis, conviva*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 348; *H. magnicollis*, E. Africa, KOLBE, p. 78, Mt. Mus. Hamburg, xiv : n. spp.
- Hypocarabus*, sect. n. of *Carabus*, q. v.
- Iridessus*: position and characters, TSCHITSCHÉRINE, p. 60, Abeille, xxix.
- Laccopterum macleayi* (= *spencii* Mael. nec Westw.), N. S. Wales, SLOANE, P. Linn. Soc. N. S. Wales, xxii, p. 192, n. sp.
- Lebia cyanocephala*, var. *distincta*, FUENTE, p. 129, Act. Soc. Espan. 1897.
- L. diegana*, Madagascar, ALLUAUD, p. 169, Ann. Soc. ent. France, 1897, n. sp.

- Leistus frater*, E. Siberia, REITTER, p. 121, Wien. ent. Zeit. xvi, n. sp.  
*Leptagonum*, n. g., *Anchomenini*, p. 75, for *L. interstitiale*, n. sp., E. Africa, p. 76, KOLBE, Deutsch-Ost-Afrika, iv, Col.  
*Licinus pubifer*, Amasia, REITTER, p. 203, Wien. ent. Zeit. xvi, n. sp.  
*Liochirus*, subg. n., *Harpalides*, for *Ophonus cycloderus*, Solisky, TSCHITSCHÉRINE, p. 47, Abeille, xxix.  
*Liocnemis brevis*, var. n., *gallica*, CARRET, p. 39, Echange, 1897.  
*Lioholus*, n. g., *Harpalides*, for *L. metallescens*, n. sp., Mou-pin, TSCHITSCHÉRINE, p. 64, Abeille, xxix.  
*Lionychus nebulosus*, Madagascar, FAIRMAIRE, p. 96, Ann. Soc. ent. Belgique, xli, redescribed, p. 366, t. c., n. sp.  
*Madecassa opaca, picta*, Madagascar, ALLUAUD, p. 170, Ann. Soc. ent. France, 1897, n. spp.  
*Metophonus*, n. g., type *Harpalus syriacus*, BEDEL, p. 111, Cat. Col. Nord Afrique.  
*Microtyphlus theryi*, Algeria, GUILLEBEAU, p. 222, Bull. Soc. ent. France, 1897, n. sp.  
*Migadophonus*, subg. n., cf. *Ophonus*.  
*Neocarenum spenceri*, Centr. Australia, SLOANE, p. 221, P. Linn. Soc. N. S. Wales, xxii, n. sp.  
*Nesocorabus*, subg. n. of *Carabus* for the Canarian species, BEDEL, p. 23, Abeille, Cat. Col. Nord Afrique [omitted in Zool. Rec. 1895].  
*Nesarpalus*, n. g. for *Harpalus vividus*, Dej., BEDEL, p. 111, Cat. Col. Nord Afrique.  
*Notiophilus*: table of palaearctic, pp. 361-364, *N. danieli*, n. n. for *orientalis*, Reitt., p. 364, REITTER, Ent. Nachr. xxiii.  
*N. retowskii*, Crimea, id. t. c. p. 364, n. sp.  
*Nycteis brevicollis* (= *Thyreopteris communimacula*, F.), FAIRMAIRE, p. 97, Ann. Soc. ent. Belgique, xli.  
*N. inermis*, Madagascar, ALLUAUD, p. 169, Ann. Soc. ent. France, 1897, n. sp.  
*Omasus vulgaris*, var. n., *alternans*, CARRET, p. 39, Echange, 1897.  
*Omophon*: table of N. American species, CASEY, pp. 300 & 301, Ann. N. York Ac. ix.  
*O. lacustre*, p. 301, *texanum, concinnum*, p. 302, *solidum*, p. 303, *gemma*, N. America, *sonora*, N. Mexico, p. 304, *pallidum*, Utah, p. 305, Casey, t. c. : n. spp.  
*Omphreoides furcatus*, Madagascar, ALLUAUD, p. 172, Ann. Soc. ent. France, 1897, n. sp.  
*Ophonus*, subg. n., cf. *Cephalomorphus*.  
*Ophonus (Pardileus) davidi*, China, p. 45, *O. (Migadophonus) subg. n. enigma*, Korea, p. 47, TSCHITSCHÉRINE, Abeille, xxix; *O. cyanopterus*, Turkestan, TSCHITSCHÉRINE, p. 76, t. c. : n. spp.  
*Oxyacarabus*, subg. n. of *Carabus* for *C. sapphirinus*, SEMENOW, p. 507, Horæ Soc. ent. Ross. xxxi.  
*Pachycephenus*, n. sect. of *Carabus* subgen. *Cratocephalus*, for *C. balassogloï* Dohrn, SEMENOW, p. 477, Horæ Soc. ent. Ross. xxxi.  
*Pachytachelus clivinoides*, p. 167, *luticola*, p. 168, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897, n. spp.  
*Peliocypas insularis*, Nossi Bé, FAIRMAIRE, p. 95, Ann. Soc. ent. Belgique, xli, n. sp.  
*Pemphus longipes*, California, CASEY, p. 339, Ann. N. York Ac. ix, n. sp.  
*Pentagonica conradti*, Usambara, KOLBE, p. 50, Deutsch-Ost-Afrika, iv, Col. n. sp.  
*Platycorabus pseudonothus*, characters and position, KRAATZ, p. 31, Deutsche ent. Zeitschr. 1897.  
*Platymetopus irisans*, Africa and Madagascar, BRANCSIK, p. 109, Jahresh. Ver. Trencsen. xix, n. sp.

- Polyhirma suturalis*, p. 57, *salamensis*, p. 58, Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. n. spp.
- Promecognathus debilis*, California, CASEY, p. 346, Ann. N. York Ac. vi, n. sp.
- Pselaphoxys*, n. g., *Harpalides*, for *Bradycellus laticolor* Bates, TSCHITSCHÉRINE, p. 61, Abeille, xxix.
- Pterostichus glaber*, Germany, VORBRINGER, p. 323, Ent. Nachr. xxiii, n. sp. (cf. KRAATZ, *t. c.*, p. 355).
- Rhigocarabus*, discussed, SEMENOW, pp. 498–503, Horæ Soc. ent. Ross. xxxi.
- Scarites arenarius*, inland localities, MAYET, p. 214, Bull. Soc. ent. France, 1897.
- Scotodipnus* and allies, notes on, *S. doderoi*, characters, BALBI, pp. 50–52 & 100–103, Riv. ital. Sci. Nat. xvii.
- Selenophorus approximatus*, Zambesi, KOLBE, p. 349, Ent. Nachr. xxiii, n. sp.
- Stenolophus thomsoni*, Sweden, ROTH, p. 133, Ent. Tidskr. 1897; *S. sinensis* Kiang-si, TSCHITSCHÉRINE, Abeille, xxix, p. 61 : n. spp.
- Syzygocarabus*, sect. n. of *Carabus* for *cateniger* Mor. and *buddhaicus* Sem. SEMENOW, p. 364, Horæ Soc. ent. Ross. xxxi.
- Tachycarabus*, sect. n. of *Carabus*, q. v.
- Tachycellus*: characters and members, *T. anchomenoides* Bates, referred to *Bradycellus*, TSCHITSCHÉRINE, p. 62, Abeille, xxix.
- Tachys micros* (= *gregarius* Chaud.), BEDEL, p. 35, Abeille, xxix.
- Teffus carinatus*, var. n., *nigrocyaneus*, KOLBE, p. 348, Ent. Nachr. xxiii; *T. gogonicus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 62, n. sp.
- Teratidium perlongum*, p. 226, *laticeps*, p. 227, Australia, SLOANE, P. Linn. Soc. N. S. Wales, xxii, n. spp.
- Tetragonoderus sulcipennis*, Fairm. referred to *Lebia*, ALLUAUD, p. 169, Ann. Soc. ent. France, 1897.
- T. quadricollis*, Madagascar, FAIRMAIRE, p. 96, Ann. Soc. ent. Belgique, xli; *T. bastardi*, Madagascar, ALLUAUD, p. 372, Bull. Mus. Paris, 1896; [*T. bastardi* (= *quadricollis* Fairm.), ALLUAUD, p. 151, Bull. Soc. ent. France, 1897] : n. spp.
- Thyreopterus crassicornis*, p. 96, *ornatipennis*, p. 97, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.
- Tomocarabus reitteri*, description, ROESCHKE, p. 79, Deutsche ent. Zeitschr. 1897.
- Trechus dromioides*, Margelan, REITTER, p. 246, pl. iii, f. 1, Wien. ent. Zeit. xvi; *T. (Anophthalmus) severi*, Carinthia, GANGLBAUER, p. 565, Verh. Ges. Wien, 1897 : n. spp.
- Trichocarenum cylindricum*, W. Australia, SLOANE, p. 220, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Trichotenus agilis*, Mou-pin, TSCHITSCHÉRINE, p. 59, Abeille, xxix, n. sp.
- Zuphium roberti*, Madagascar, FAIRMAIRE, p. 93, Ann. Soc. ent. Belgique, xli; *Z. bedeli*, Algeria, VAULOGER, p. 237, Bull. Soc. ent. France, 1897; *Z. ciliatum*, p. 292, *varum*, Algeria, *vaucheri*, Marocco, p. 293, VAULOGER, Bull. Soc. ent. France, 1897 : n. spp.

### HALIPLIDÆ.

- Haliplidæ*: wings of, GRIEFINI, pp. 114–116, Miscell. ent. v.
- Brychius rossicus*, Jaroslaw, SEMENOW, p. 542, Horæ Soc. ent. Ross. xxxi, n. sp.
- Haliplus jukolevi*, Jaroslaw, SEMENOW, p. 545, *t. c.* n. sp.

### DTYTISCIDÆ.

- [Cf. ALLUAUD (14), GADEAU (389), GRIFFINI (424), JAKOLEW (540), MEINERT (736), RÉGIMBART (895, 896), REITTER (898).]  
 Embryonic development of trophi of *Dytiscus*, MEINERT (736).  
 The *Dytiscidæ* (and *Gyrinidæ*) of the Mascarene islands and Seychelles, ALLUAUD, Bull. Soc. ent. France, 1897, pp. 210-214.  
 Physiological experiments on *Dytiscus marginalis*, GADEAU, pp. 91-97, Bull. Soc. ent. France, 1897.  
*Agabus* (*Anisomera*) *blatta*, Chinese Turkestan, p. 39, *A. (Gaurodytes) solskii*, W. Turkestan, p. 40, JAKOWLEW, Abeille, xxix, n. spp.  
*Anagabus*, n. g. near *Agabus* for *A. semenowi*, p. 38, *sogdianus*, p. 39, n. spp., W. Turkestan, JAKOWLEW, Abeille, xxix.  
*Bidessus sechellensis*, Seychelles, *luteopictus*, p. 208, *mauritiensis*, p. 209, Mauritius, RÉGIMBART, Bull. Soc. ent. France, 1897, n. spp.  
*Copelatus instabilis*, Mauritius, RÉGIMBART, p. 210, Bull. Soc. ent. France, 1897, n. sp.  
*Cybister tripunctatus*, Aldabran form, LINELL, p. 699, P. U. S. Mus. xix.  
*C. jalla*, Zambesi, GRIFFINI, Boll. Mus. Torino, 1897, No. 268, n. sp.  
*Hydronebrius*, n. g. for *Agabus cordaticollis*, Reitt., JAKOWLEW, p. 37, Abeille, xxix.  
*Hydroporus hedwigi*, Tatra Mts., REITTER, p. 46, Wien. ent. Zeit. xvi; *H. semenowi*, Centr. Russia, JAKOWLEW, p. 41, Abeille, xxix; *H. (Deronectes) mascatensis*, Mascat, RÉGIMBART, p. 206, Bull. Soc. ent. France, 1897: n. spp.  
*Hyphydrus scriptus*, var. n., *soarezius*, ALLUAUD, p. 211, Bull. Soc. ent. France, 1897.  
*Laccophilus maindroni*, Mascat, RÉGIMBART, p. 207, Bull. Soc. ent. France, 1897, n. sp.

### GYRINIDÆ.

- Orectochilus involvens* (= *zeravschanicus* Glas.), REITTER, p. 79, Wien. ent. Zeit. xvi.

### HYDROPHILIDÆ.

- [Cf. FAIRMAIRE (305), MEINERT (736), REITTER (912).]  
 Embryonic development of the trophi, MEINERT (736).  
*Berosus cribrosus*, Madagascar, FAIRMAIRE, p. 368, Ann. Soc. ent. Belgique, xli, n. sp.  
*Hydrochus nodulifer*, Caucasus, REITTER, p. 210, Deutsche ent. Zeitschr. 1897, n. sp.  
*Hydrous caraboides*, var. n., *costata*, LÜDERWALDT, p. 126, Ent. Zeit. Stettin, lviii.  
*Ochthebius subtrigosus*, Caucasus, *kuverti*, p. 209, *costatellus*, p. 210, Mongolia, REITTER, Deutsche ent. Zeitschr. 1897, n. spp.

### STAPHYLINIDÆ.

- [Cf. CASEY (162), ERICSON (295), FAUVEL (325-328A), FLEISCHER (341), GANGLBAUER (1205), HELLER (467), KEEN (565), PIC (849), REITTER (898, 903), SAHLBERG (952), VAULOGER (1116), WASMANN (1155, 1156, 1158, 1159, 1165-1169).]  
 Catalogue of the *Staphylinidæ* of Azores, Madeira, Canaries, and Barbary, FAUVEL, Rev. Ent. franc. 1897, pp. 237-371.

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*Aleochara (Polychara) breiti*, Vienna, GANGLBAUER, p. 566, Verh. Ges. Wien, 1897, n. sp.

*Brathinus* referred to *Omaliini*, CASEY, p. 354, Ann. N. York Ac. ix.

*Cafius sticki*, Tunis, VAULOGER, p. 238, Bull. Soc. ent. France, 1897, n. sp.

*Coprophilus*; list of species and synonymy, FAUVEL, pp. 226–229, Rev. Ent. franc. 1897.

*Ecitonusa*, n. g. near *Ecitonilla*, p. 281, for *E. schmitti*, n. sp., N. Carolina, p. 282, Pl. ii, f. 4, WASMANN, Deutsche ent. Zeitschr. 1897.

*Haida*, n. g. *Omaliides*, for *H. keeni*, n. sp. Queen Charlotte Islands, KEEN, p. 285, cut, Canad. Ent. xxix.

*Homalium cæsum* and allies, characters, FAUVEL, p. 230, Rev. Ent. franc. 1897.

*Homœusa rutilipennis*, Spain, REITTER, p. 46, Wien. ent. Zeit. xvi, n. sp.

*Leptusa globulicollis*, habitat, PEYERIMHOFF, p. 306, Bull. Soc. Ent. France, 1897.

*L. schaschli*, Carinthia, GANGLBAUER, p. 567, Verh. Ges. Wien, 1897, n. sp.

*Liparocephalus brevipennis*, habits, cut, *L. cordicollis*, KEEN, pp. 285 & 286, Canad. Ent. xxix.

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*Myrmedonia (Rhynchodonia) leonina*, W. Africa, WASMANN, p. 279, Deutsche ent. Zeitschr. 1879; *M. (Rhynchodonia) termitophila*, p. 28, *termitaria*, p. 29, Burma, WASMANN, Ann. Mus. Genova, xxxviii : n. spp.

*Oligusa*, n. g., near *Oligota*, p. 267, for *O. cremastogastris*, n. sp., Madagascar, p. 268, WASMANN, Deutsche ent. Zeitschr. 1897.

*Omalius lokayi*, Transylvania, FLEISCHER, p. 152, Wien. ent. Zeit. xvi, n. sp.

*Osorius celebesus*, Celebes, HELLER, p. 2, Abh. Mus. Dresden, vi, No. 10, n. sp.

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*Phyllodrepa angustata*, var. n., *obscuricornis*, SAHLBERG, p. 365, Annuaire Mus. St. Petersb. 1897. *P. polaris*, Novaia Semlia, *id.*, t. c., p. 366, n. sp.

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*Tanyrhinus singularis*, habits, cut, KEEN, p. 286, Canad. Ent. xxix.

*Trichophya lativentris*, Colorado, CASEY, p. 549, Ann. N. York Ac. ix, n. sp.

*Velleiopsis varendorffi*, Ordubad, REITTER, p. 247, pl. iii, fig. 3, Wien. ent. Zeit. xvi, n. sp.

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PSELAPHIDÆ.

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*Actium angustum, bifoveatum*, N. America, CASEY, p. 559, t. c. n. spp.

*Acylopselaphus calcaratus*, Madagascar, RAFFRAY, p. 268, Ann. Soc. ent. France, 1897, n. sp.

*Agnocerus mocquerysi*, Gaboon, RAFFRAY, p. 269, t. c. n. sp.

*Amaurops apfelbecki*, Herzegowina, GANGLBAUER, p. 494, Wiss. Mitt. Bosnien, v, n. sp.

*Anchylarthron curtipenne*, Iowa, p. 611, *caviceps*, p. 612, Florida, CASEY, Ann. N. York Ac. ix, n. spp.

*Ancystrocerus militaris lævipennis*, Sumatra, RAFFRAY, p. 279, Ann. Soc. ent. France, 1896, n. spp.

*Anoplectus*, n. g., p. 59, near *Euplectus*, for *A. niger*, n. sp. Cape Colony, p. 60, RAFFRAY, Tr. S. African Soc. x.

*Apharina borneensis*, Telang, RAFFRAY, p. 270, Ann. Soc. ent. France, 1896, n. sp.

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*Apoderiger*, n. g., p. 263, *Clavigerides*, for *A. cervinus*, n. sp. Madagascar, p. 264, WASMANN, Deutsche ent. Zeitschr. 1897.

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*Arnylbium cilipes, forcipifer*, Sumatra, RAFFRAY, Ann. Soc. ent. France, 1896, p. 251, n. spp.

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*Asymoplectus*, n. g., near *Euplectus*, p. 55, for *Biblopectus discicollis*, Raff. and the following n. spp. from S. Africa, *irregularis*, p. 56, *caviventris luctuosus*, p. 57, *aterrinus*, p. 58, *atratus*, p. 59, RAFFRAY, Tr. S. African Soc. x.

*Basolum*, n. g. for *Trimium impunctatum*, Brend. CASEY, p. 571, Ann. N. York Ac. ix.

*Batoxyia*, n. g., near *Batoctenus*, for *B. punctata*, n. sp. Zambesi, pl. xvii, fig. 4, RAFFRAY, p. 83, Tr. S. African Soc. x.

*Batraxis infirma*, p. 253, *navata militaris*, p. 254, Sumatra, *sinensis*, N. China, p. 255, RAFFRAY, Ann. Soc. ent. France, 1896, n. spp.

*Batriscinus setulosus*, Sumatra, RAFFRAY, p. 234, Ann. Soc. ent. France, 1896, n. sp.

*Batriscodes natalensis*, S. Africa, RAFFRAY, p. 87, Tr. S. African Soc. x ; *B. incisus*, Gaboon, *erectus*, Borneo, pl. i, fig. 2, p. 244, *elongatus*, fig. 3, Gaboon, *trilunatus*, fig. 4, Burma, p. 245, *truncatus*, Sumatra, *mondherce*, E. Africa, p. 246, *quadratus*, fig. 6, Sumatra, *trilobatus*, fig. 7, Celebes, p. 247, *ciatricoccus*, Sumatra, p. 248, *reifteri*, Borneo, *falsus*, Java, p. 249, *epistomalis*, Sumatra, p. 250, RAFFRAY, Ann. Soc. ent. France, 1896 : n. spp.

*Batriscus* (*Apobatriscus* subg. n.) *gabonicus*, Africa, p. 235, pl. x, fig. 14, *B. regius*, Brazil, *fuustus*, Burma, p. 236, *carinicolis*, *griseopubescens*, p. 238, *carbunculus*, p. 239, *rudis, asper*, p. 240, *transversalis*, Sumatra, *B. (Ozarthrius) ophthalmicus*, p. 241, *semipacis*, p. 242, Gaboon, RAFFRAY, Ann. Soc. ent. France, 1896 ; *B. (Apotobatriscus) rufus*, Cape Colony, RAFFRAY, p. 128, Tr. S. African Soc. x ; *B. temporalis*, p. 573, *fossicauda*, p. 575, *uncicornis*, p. 576, *harringtoni*, p. 578, *cavicornis*, p. 579, *schmitti*, p. 581, N. America, CASEY, Ann. N. York Ac. ix. : n. spp.



- Bergrothiella*, n. n., for *Bergrothia*, REITTER, p. 241, Wien. ent. Zeit. xvi.  
*Biblopectus sobrinus*, Rhode island, CASEY, p. 555, Ann. N. York Ac. ix, n. sp.  
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*B. arguta*, Michigan, CASEY, p. 585, Ann. N. York Ac. ix : n. spp.  
*Bythinoderes marginata*, Sumatra, RAFFRAY, p. 265, Ann. Soc. ent. France, 1896, n. sp.  
*Bythinophanax punctatus*, Sumatra, RAFFRAY, p. 266, t. c. n. sp.  
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*Cedius robustus*, Columbia, N. A., CASEY, p. 626, t. c. n. sp.  
*Centrophthalmus sternalis*, Sumatra, *lavis*, Borneo, RAFFRAY, p. 276, Ann. Soc. ent. France, 1896, n. spp.  
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*C. nitidus*, var. (= *kaufmanni* Reitt.), APFELBECK, p. 507, Wiss. Mitt. Bosnien, v.  
*C. katherinæ*, p. 231, *olympicus*, *ottomanus*, p. 232, Brussa, ESCHERICH, Wien. ent. Zeit. xvi, n. spp.  
*Clarithrus palmarum*, p. 243, Zanzibar, RAFFRAY, Ann. Soc. ent. France, 1896, n. sp.  
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*Cryptorhinula schaufussi*, Brazil, RAFFRAY, p. 261, Ann. Soc. ent. France, 1896, n. sp.  
*Ctenis brevicollis*, Mexico, p. 272, *amazonica*, p. 273, *nasuta*, Amazons, *angustata*, Brazil, p. 274, RAFFRAY, t. c. n. spp.  
*Ctenisodes*, n. g., p. 274, near *Ctenistes*, for *C. laticeps*, n. sp. Mexico, p. 275, RAFFRAY, Ann. Soc. ent. France, 1896.  
*Ctenotilius*, n. g., near *Tmesiphorus* for *C. costatus*, n. sp. Sumatra, p. 278, RAFFRAY, Ann. Soc. ent. France, 1896.  
*Cupila*, n. g., for *Trimium clavicornis*, Mäklin, CASEY, p. 561, Ann. N. York Ac. ix.  
*Cylindroma*, n. g., near *Batoctenus*, p. 232, for *C. excavata*, n. sp. Sumatra, p. 233, pl. x, f. 13, RAFFRAY, Ann. Soc. ent. France, 1896.  
*Dalmina gratitudinis*, p. 79, *concolor*, p. 80, *irregularis*, p. 81, *elegans*, p. 82, pl. xvii, f. 1, *elizabethana*, p. 121, RAFFRAY, Tr. S. African Soc. x, n. spp.  
*Dalmodes schaufussi*, Central America, RAFFRAY, p. 267, Ann. Soc. ent. France, 1896, n. sp.  
*Dalmophysis*, n. g., p. 267, near *Dalmodes* for *D. cylindrica*, n. sp., Mexico, p. 268, RAFFRAY, Ann. Soc. ent. France, 1896.  
*Dalmosellu*, n. g. for part of N. American *Trimium* and *D. tenuis*, n. sp. Pennsylvania, CASEY, p. 570, Ann. N. York Ac. ix.  
*Decarthron laurenticum*, Canada, CASEY, p. 584, Ann. N. York Ac. ix, n. sp.  
*Enantius schaufussi*, Sumatra, RAFFRAY, p. 275, Ann. Soc. ent. France, 1896, n. sp.  
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*Eupines cavicornis*, Mexico, RAFFRAY, p. 258, Ann. Soc. ent. France, 1896, n. sp.

- Eupinopsis*, n. g. for *Rytus perforatus*, Schauf., RAFFRAY, p. 261, t. c.  
*Euplectus megacephalus*, Madagascar, RAFFRAY, p. 265, Ann. Soc. ent. France, 1897; *E. discoidalis*, p. 53, *quadriceps*, p. 54, S. Africa, RAFFRAY, Tr. S. African Soc. x; *E. disjunctus*, Virginia, CASEY, p. 554, Ann. N. York Ac. ix : n. spp.  
*Euprenius*, characters amended, RAFFRAY, p. 262, Ann. Soc. ent. France, 1896. *E. gibbicollis*, Mexico, *longicollis*, Bogota, p. 263, *mexicanus*, *grouvellei*, p. 264, Mexico, RAFFRAY, t. c. n. spp.  
*Filiger squamosus*, Gaboon, RAFFRAY, p. 271, t. c. n. sp.  
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*Laphioderus brevipennis*, Cape Colony, RAFFRAY, p. 102, Tr. S. African Soc. x, n. sp.  
*Marellus granosus*, Natal, RAFFRAY, p. 113, Tr. S. African Soc. x, n. sp.  
*Megafaronus*, n. g., *Faronini* for *M. ventralis*, n. sp., Oregon, CASEY, p. 550, Ann. N. York Ac. ix.  
*Melba*, n. g., p. 565, for a part of the N. American *Trimium* and *M. texana*, p. 566, *sulcata*, p. 567, *fossiger*, p. 568, *uniformis*, p. 569, n. spp., N. America, CASEY, Ann. N. York Ac. ix.  
*Metopioxys hamatus*, p. 252, *tricuspidatus*, p. 253, Amazons, RAFFRAY, Ann. Soc. ent. France, 1896, n. spp.  
*Mina laticollis*, p. 233, *rugiceps*, p. 234, Sumatra, RAFFRAY, t. c. n. sp.  
*Miroclaviger alluaudi*, Madagascar, RAFFRAY, p. 270, Ann. Soc. ent. France, 1897, n. sp.  
*Nisaxis parviceps*, Nebraska, CASEY, p. 610, Ann. N. York Ac. ix, n. sp.  
*Novoclaviger wroughtoni*, referred to *Fustigerodes*, WASMANN, p. 202, Wien. ent. Zeit. xvi.  
*Odontalgus costatus*, Cape Colony, RAFFRAY, p. 106, pl. xvii, fig. 9, Tr. S. African Soc. x, n. sp.  
*Pilopius*, n. g., p. 617, for the American *Ctenistes*, with the following n. spp., *P. lacustris*, p. 619, *sagittatus*, p. 620, *georgianus*, p. 621, *towensis granicollis*, p. 622, *floridanus*, p. 623, *cinderella*, *impressipennis*, p. 624, N. America, CASEY, Ann. N. York Ac. ix.  
*Prodalma*, n. g., near *Euplectus*, for *P. capensis*, pl. xvi, fig. 19, n. sp., S. Africa, RAFFRAY, p. 51, Tr. S. African Soc. x.  
*Proterus*, n. g., near *Mechanicus*, for *P. punctatus*, pl. x, fig. 9, n. sp., Sumatra, RAFFRAY, p. 231, Ann. Soc. ent. France, 1896.  
*Pselaphischneus*, n. g., near *Pselaphus*, for *P. squamosus*, pl. xvii, fig. 2, n. sp., Cape Town, RAFFRAY, p. 99, Tr. S. African Soc. x.  
*Pselaphocerus diversus*, Cape Town, p. 111, *antennatus*, p. 112, pl. xvii, fig. 13, RAFFRAY, Tr. S. African Soc. x, n. spp.  
*Pselaphodes sumatrensis*, Palembang, RAFFRAY, p. 277, Ann. Soc. ent. France, 1896, n. sp.  
*Pselaptus grouvellei*, Bahia, RAFFRAY, p. 260, Ann. Soc. ent. France, 1896, n. sp.  
*Pseudotychus*, n. g., *Tyrini*, for *P. nigerrimus*, n. sp., Cape Colony, RAFFRAY, p. 114, Tr. S. African Soc. x.  
*Pycnoplectus*, n. g. for part of *Euplectus* and *P. tenellus*, p. 552, *imperfectus*, p. 553, n. spp., N. America, CASEY, Ann. N. York Ac. ix.  
*Pygoxyon apfelbecki*, Bosnia, GANGLBAUER, p. 493, Wiss. Mitt. Bosnien, v, n. sp.  
*Raduma sulcatus*, Madagascar, WASMANN, p. 262, pl. i, fig. 3, Deutsche ent. Zeitschr. 1897, n. sp.

- Radamides*, n. g., p. 261, *Clavigerides* for *R. trifoveolatus*, n. sp., Madagascar, p. 262, pl. i, fig. 2, WASMANN, Deutsche ent. Zeitschr. 1897.
- Raffrayia caviceps*, p. 64, *deplanata*, *incerta*, p. 65, *variabilis*, p. 66, *nasuta*, p. 67, *calcarata*, p. 68, *armata*, p. 69, *cruciata*, p. 70, *bicolor*, p. 71, *laticollis*, p. 73, *abdominalis*, *pilosella*, p. 74, *natalensis*, *nodosa*, p. 75, *microcephala*, p. 76, *obscura*, p. 77, S. Africa, RAFFRAY, Tr. S. African Soc. x, n. spp.
- Ramecia*: position and affinities, CASEY, p. 552, Ann. N. York Ac. ix.
- Reichenbachia*: table of N. American species, CASEY, pp. 586-592, Ann. N. York Ac. ix. *R. subsimilis*, p. 594, *kansana*, p. 595, *ursina*, p. 596, *insolita*, p. 597, *sodalis*, p. 598, *fusciventris*, *peregrinator*, p. 599, *corporalis*, p. 600, *borealis*, p. 601, *distans*, p. 602, *procera*, p. 603, *arcifer*, p. 604, *taphrocera*, p. 605, *falli*, p. 606, *turgidicornis*, p. 607, *binodifer articularis fuscicornis*, p. 608, *spatulifer*, p. 609, N. America, CASEY, t. c.; *R. decipiens*, *subpubescens*, p. 92, *discreta*, p. 93, *afra*, p. 94, *rivularis*, p. 129, S. Africa, RAFFRAY, Tr. S. African Soc. x; *R. auriculata*, *viduana*, p. 266, *usitata*, p. 267, Madagascar, RAFFRAY, Ann. Soc. ent. France, 1897: n. spp.
- Simplona*, n. g., p. 561, for *S. arizonica*, n. sp., Williams, p. 562, CASEY, Ann. N. York Ac. ix.
- Syrbatus princeps*, Reitter, referred to *Batrisus*, RAFFRAY, p. 236, Ann. Soc. ent. France, 1896.
- S. mashuna*, S. Africa, RAFFRAY, p. 86, pl. xvii, fig. 3, Tr. S. African Soc. x, n. sp.
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- Theocerus*, n. g., *Clavigerides* for *T. crenulatus*, n. sp., Madagascar, RAFFRAY, p. 280, Ann. Soc. ent. France, 1896.
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- Trichonomorphus porcinus*, Sumatra, RAFFRAY, p. 232, Ann. Soc. ent. France, 1896, n. sp.
- Trimiodytes*, n. g., near *Euplectus*, for *T. palustris*, pl. xvi, fig. 18, n. sp., p. 52, and *T. setifer*, n. sp., p. 127, Cape Colony, RAFFRAY, Tr. S. African Soc. x.
- Trimionelba*, n. g., p. 563, for *T. laevis*, n. sp. Columbia, N. A., p. 564, CASEY, Ann. N. York Ac. ix.
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- Tychus bosnicus*, Sarajevo, GANGLBAUER, p. 495, Wiss. Mitt. Bosnien, v, n. sp. ?; *T. pocahontas*, p. 615, *hexagonus*, p. 616, N. America, CASEY, Ann. N. York Ac. ix: n. spp.
- Tyrus carinifer*, p. 628, *semiruber*, *consimilis*, p. 629, N. America, CASEY, Ann. N. York Ac. ix, n. spp.
- Xenogyna*, n. g., p. 60, near *Eutyphlus*, for *X. heterocera*, n. sp. Cape Colony, p. 61, RAFFRAY, Tr. S. African Soc. x.
- Xybarida*, n. g., near *Xybaris*, for *X. clavata*, n. sp. Brazil, RAFFRAY, p. 260, Ann. Soc. ent. France, 1896.
- Zethopsus laticeps*, *sulcicollis*, S. Africa, RAFFRAY, p. 50, Tr. S. African Soc. x; *Z. major*, *sulcicollis*, p. 228, *cornutus*, *latifrons*, p. 229, Zanzibar, RAFFRAY, Ann. Soc. ent. France, 1896: n. spp.
- Zolium*, n. g. for *Trimioptis eggersi*, CASEY, p. 562, Ann. N. York Ac. ix.

## PAUSSIDÆ.

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*Protopaussus walkeri*, China, WATERHOUSE, p. 391, Tr. ent. Soc. London, 1897, n. sp.

## SCYDMÆNIDÆ.

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- Revision of the N. American with discussion on classification and establishment of ten tribes, CASEY, Ann. N. York Ac. ix, pp. 351, etc.  
*Acholerope*, n. g., p. 535, near *Eumicrus*, for *zimmermanni*, Schaum, and *A. retrusa*, n. sp. Pennsylvania, p. 537, CASEY, Ann. N. York Ac. ix.  
*Ascydmus*, n. g., p. 505, for *A. tener*, n. sp. Pennsylvania, p. 506, CASEY, t. c.  
*Catalinus*, n. g. for *Scydmænus angustus*, Lec. CASEY, p. 492, t. c.  
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*Ceramphis*, n. g. for *Scydmænus deformatu*, Horn, CASEY, p. 538, Ann. N. York Ac. ix.  
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*Drastophus*, n. g., near *Euconnus*, for *D. levicollis*, n. sp. California, CASEY, p. 389, t. c.  
*Euconnus ventralis*, p. 366, *semiruber*, p. 368, *varicornis*, p. 369, *E. (Scopophus, subg. n.) cavipennis*, p. 371, *occultus*, p. 372, *nigrescens*, p. 373, *affinis*, p. 374, *gratus*, p. 375, *putus*, p. 376, *merus*, p. 377, *relucens*, p. 378, *E. (Psomophus, subg. n.) hædillus*, p. 380, *impotens*, p. 382, *callidus*, *debilis*, p. 383, *capitatus*, p. 384, N. America, CASEY, t. c. : n. spp.  
*Eumicrus occipitalis*, p. 526, *foveatus*, p. 528, *floridanus*, p. 530, *longicollis*, p. 531, *ochreateus*, p. 532, *saginateus*, p. 533, *cruralis*, p. 534, N. America, CASEY, t. c., n. spp.  
*Eustemmus diversus*, p. 23, *theryi*, *sternalis*, *bonnairei*, p. 24, Algeria, *E. (Cholerus) reitteri*, p. 25, GUILLEBEAU, 1897, n. spp.  
*Eutheia americana*, Pennsylvania, CASEY, p. 508, Ann. N. York Ac. ix, n. sp.  
*Leptoscydmus*, n. g., p. 518, for *Eumicrus caseyi* and *L. cavifrons*, n. sp. Pennsylvania, p. 521, CASEY, t. c.  
*Lophoderus*, n. g., p. 356, for *Scydmænus biformis*, Mäkl. *gracilis*, Lec. and with *L. arcifer*, p. 359, *myops*, p. 361, n. spp. N. America, CASEY, t. c.  
*Neladius*, n. g., p. 498, for *N. tenuis*, n. sp. Pennsylvania, p. 499, CASEY, t. c.  
*Noctophus*, n. g., p. 387, near *Euconnus*, for *N. schmitti*, n. sp. N. Carolina, p. 388, CASEY, t. c.  
*Opresus*, n. g., p. 494, for *Scydmænus misellus*, Lec. and *O. luteus*, p. 495, *atomus*, p. 496, n. spp. Pennsylvania, CASEY, t. c.  
*Papusus*, n. g. *Clidicini*, p. 542, for *P. macer*, n. sp. California, p. 544, CASEY, t. c.  
*Parascydmus*, subg. n. of *Scydmænus*, q. v. CASEY, p. 473, t. c.  
*Psomophus*, subg. n. of *Euconnus*.  
*Pyonophus*, n. g. for *Scydmænus rarus*, Lec. CASEY, p. 385, t. c.

- Scopophus*, subg. n. of *Euconnus*, q. v. CASEY, p. 365, *t. c.*  
*Scydmaenus badius*, p. 475, *conjux*, p. 476, *turbatus*, p. 478, *puncticeps*  
*sculpticeps*, p. 479, *ovipennis*, p. 480, *S. (Brachycephis) pacificus*, p. 482,  
*tristis*, p. 484, *pubipennis*, p. 486, *S. (Parascydmsus*, subg. n.) *ventri-*  
*culus*, p. 487, *corpusculum*, *caducus*, p. 488, *exiguus*, p. 489, N. America,  
CASEY, Ann. N. York Ac. ix, n. spp.  
*Smicrophus*, n. g., near *Euconnus*, for *S. leviceps*, Iowa, p. 467, *evanescens*,  
Florida, p. 468, n. spp. CASEY, *t. c.*  
*Taphroscydmsus*, subg. n. of *Scydmaenus*, for *S. californicus*, Motsch. CASEY,  
p. 473, *t. c.*  
*Veraphis*, n. g., p. 509, for some N. American species of *Eutheia* and *V.*  
*cavicornis*, p. 511, *capitata*, p. 512, n. spp. N. America, CASEY, *t. c.*  
*Xestophus*, subg. n. of *Euconnus* for *Scydmaenus salinator*, Lec. CASEY,  
p. 365, *t. c.*

## SILPHIDÆ.

- [Cf. FABRE (304), GUILLEBEAU (445), HAMANN (448), REITTER (900, 912),  
SCHWARZ (987), WASMANN (1170).]  
*Aclypea seriatorugosa*, Askhabad, REITTER, p. 211, Deutsche ent. Zeitschr.  
1897, n. sp.  
*Agathidium fronticorne*, Talysch, REITTER, p. 123, Wien. ent. Zeit. xvi,  
n. sp.  
*Hydnobius secundus*, Vacluse, GUILLEBEAU, p. 224, Bull. Soc. ent. France,  
1897, n. sp.  
*Leptoderus hohenwarti*, nervous system, HAMANN (448).  
*Lomechon*, n. g., *Cholevini* (myrmecophilous) for *L. alfaroi*, n. sp., Costa  
Rica, pl. ii, fig. 5, WASMANN, p. 284, Deutsche ent. Zeitschr. 1897.  
*Necrophorus*: habits and instinct, FABRE (304). *N. nepalensis*, Hope  
(= *quadripunctatus*, Kr.), *N. vespilloides* var. n. *sylvivagus*, REITTER,  
p. 48, Wien. ent. Zeit. xvi.  
*Pinodytes hamiltoni*, habits, HAMILTON, p. 34, Ent. News Philad. 1897.  
*Ptomaphagus cavernicola*, Missouri, SCHWARZ, p. 58, P. ent. Soc. Washing-  
ton, iv, n. sp.

## TRICHOPTERYGIDÆ and SCAPHIDIIDÆ.

- Ptenidium scutellare*, Algeria, GUILLEBEAU, p. 22, Echange, 1897, n. sp.  
*Scaphidium interruptum*, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique,  
xli, n. sp.

## HISTERIDÆ.

- [Cf. KOLBE (601), LEWIS (680, 681), REITTER (900), THÉRY (1074, 1076).]  
*Anaglymma*: *Phelister impar* Mars. referred to this, LEWIS, p. 362, Ann.  
Nat. Hist. xx.  
*A. consobrina*, Cameroons, LEWIS, p. 180, *t. c.* n. sp.  
*Apobletes servulus*, Cameroons, LEWIS, p. 356, *t. c.* n. sp.  
*Chalcurgus*, n. g., near *Pachycrærus*, for *C. cyaneus*, *minor*, n. spp. E. Africa,  
KOLBE, Deutsch.-Ost.-Afrika, iv, Col. p. 100.  
*Coproxenus*, n. g., p. 190, for *C. marshalli*, S. Africa, p. 191, *opacipennis*,  
Cameroons, p. 192, n. spp., LEWIS, Ann. Nat. Hist. xx.  
*Heterius*, relations to Ants, ESCHERICH, pp. 234–236, Wien. ent. Zeit. xvi.  
*H. chobauti*, Algeria, THÉRY, p. 26, Bull. Soc. ent. France, 1897; [*H.*  
*plicicollis* (= *chobauti* Théry), PIC, p. 311, Bull. Soc. ent. France, 1897]:  
n. sp.

- Hister intrepidus*, Natal, p. 187, *rivalis*, Congo, *marshalli*, Mashonaland, p. 188, *rubricatus*, Cameroons, p. 190, LEWIS, Ann. Nat. Hist. xx;  
*H. colensoi*, Natal, *planiformis*, Antilles, LEWIS, p. 359, *t. c.* : n. spp.  
*Hololepta mastersi* and *sidnensis*, distinguished, LEA, p. 585, P. Linn. Soc. N. S. Wales, 1897.  
*Pachycrerus*: habits, LEWIS, p. 179, Ann. Nat. Hist. xx.  
*P. morulus*, Zanzibar, LEWIS, p. 358, *t. c.*; *P. striaticeps*, Cameroons, *frater*, E. Africa, p. 181, *meridianus*, p. 182, *spatiosus*, *cariniceps*, p. 183, *tenuistriatus*, p. 184, *cavifrons*, *brevipennis*, p. 185, *sulcicollis*, p. 186, *mimicus*, p. 187, Cameroons, LEWIS, *t. c.* : n. spp.  
*Pachylopus schmidtii*, Algeria, THÉRY, p. 67, Bull. Soc. ent. France, 1897, n. sp.  
*Paratropus*: habits, LEWIS, p. 179, Ann. Nat. Hist. xx.  
*P. fungorum*, Mashonaland, LEWIS, p. 192, *t. c.* n. sp.  
*Phelister hilarulus*, Cameroons, LEWIS, p. 361, Ann. Nat. Hist. xx, n. sp.  
*Phylloma hirtipes*, Surinam, LEWIS, p. 179, *t. c.* n. sp.  
*Platysoma extrarium*, Queensland, LEWIS, p. 357, *t. c.* n. sp.  
*Plegaderus fortesculptus*, Talysch, REITTER, p. 124, Wien. ent. Zeit. xvi, n. sp.  
*Pygocælis*, n. g., near *Trypeticus*, with *P. duplicatus*, n. sp., Cameroons, LEWIS, p. 194, Ann. Nat. Hist. xx. *Pygocælis*: sexes, LEWIS, p. 364, *t. c.*  
*Stictostix mormoni*, Utah, LEWIS, p. 360, *t. c.* n. sp.  
*Triballus agrestis*, characters, LEWIS, p. 193, *t. c.*  
*Trypeticus planisternus*, p. 362, *incilis mustelinus*, p. 363, Sumatra, LEWIS, *t. c.* *T. usambicus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 104 : n. spp.  
*Trypobius* and *Trypeticus*, distinctions, LEWIS, p. 364, Ann. Nat. Hist. xx.  
*Trypobius pinguis*, *æthiops*, p. 195, *cylindraceus*, p. 196, Cameroons, LEWIS, *t. c.* n. spp.

## PHALACRIDÆ.

- Olibrus levisternus*, Akbes, GUILLEBEAU, p. 12, Echange, 1897; *O. siettii*, Hyères, GUILLEBEAU, p. 224, Bull. Soc. ent. France, 1897 : n. spp.

## NITIDULIDÆ.

- [*Cf.* BRANCHIK (124), GROUVELLE (440, 441), GUILLEBEAU (445), REITTER (900).]  
*Æthina puncticollis*, Tenasserim, p. 366, *basalis*, Sumatra, p. 367, GROUVELLE, Ann. Mus. Genova, *t. c.* xxxviii, n. spp.  
*Amphicrosus oblongus*, *bouchardi*, Sumatra, GROUVELLE, p. 368, *t. c.* n. spp.  
*Bruchypeplus hispidulus*, p. 342, *B. (Selis) dorsalis*, p. 343, Sumatra, *mixtus*, Perak, *nitidulus*, p. 344, *opacus*, Perak, *nitidus*, p. 345, *dimidiatus*, p. 346, Sumatra, GROUVELLE, *t. c.* : n. spp.  
*Camptodes nigriceps*, *mirabilis*, Bahia, p. 182, *gounellei*, Minas Geraes, p. 183, GROUVELLE, Ann. Soc. ent. France, 1896, n. spp.  
*Carpophilus (Urophorus) sanguinipennis*, p. 350, *C. modiglianii*, p. 351, *pygidialis*, *debilis*, p. 352, Sumatra, *familiaris*, Tenasserim, p. 353, GROUVELLE, *t. c.* : n. spp.  
*Cillæus modiglianii*, p. 347, *elongatissimus*, p. 348, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.  
*Cirropes ruficollis*, Colebes, GROUVELLE, p. 368, *t. c.*, n. sp.  
*Colustus modiglianii*, Sumatra, GROUVELLE, p. 342, *t. c.*; *C. gounellei*, Brazil, GROUVELLE, p. 177, Ann. Soc. ent. France, 1897 : n. spp.

- Cryptarcha octopunctata*, Burma, *basalis*, Victoria, p. 371, *modiglianii*, Sumatra, *coccinelloides*, p. 372, *elegans*, Perak, *rufomaculata*, Tenasserim, p. 373, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Cylloides corax*, Madagascar, BRANCSIK, p. 110, Jahresh. Ver. Trencsen. xix ; *C. frontalis*, p. 369, Sumatra, *variegatus*, India, *orientalis*, Borneo, p. 370, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Eidocolastus nigricans*, Sumatra, GROUVELLE, p. 357, Ann. Mus. Genova, xxxviii, n. sp.
- Epuræa modiglianii*, Sumatra, p. 358, *pumila*, India, *subreticulata*, Sumatra, p. 359, *simsoni*, p. 360, *tasmanica*, p. 361, Tasmania, GROUVELLE, *t. c.* : n. spp.
- Europa burmanica*, Ruby mines, GROUVELLE, p. 373, *t. c.* *E. (Hesperobænus) impressus*, Brazil, *maculatus*, St. Domingo, p. 210, *sordidus vicinus*, p. 211, Brazil, *corticinus*, p. 212, *frontalis chilensis*, p. 213, Chili, GROUVELLE, Ann. Soc. ent. France, 1896 : n. spp.
- Haptoncura opaca*, *nitescens*, p. 362, *dubia*, p. 363, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Haptoncus prolatus*, *depressus*, Sumatra, GROUVELLE, p. 357, *t. c.*, n. spp.
- Lasiodactylus modiglianii*, Sumatra, GROUVELLE, *t. c.*, n. sp.
- Librodor nitidulus*, Minas Geraes, GROUVELLE, p. 184, Ann. Soc. ent. France, 1896, n. sp.
- Lobiopa pubescens*, Brazil, GROUVELLE, p. 179, *t. c.*, n. sp.
- Meligethes fulvipes* Bris. (= *rubripes* Muls.), BEDEL, p. 35, Abeille, xxix.
- M. asperimus*, p. 225, *caudatus*, p. 226, France, GUILLEBEAU, Bull. Soc. ent. France, 1897, n. spp.
- Micrurula fallax*, Sumatra, GROUVELLE, p. 361, Ann. Mus. Genova, xxxviii, n. sp.
- Perilopa ferruginea*, p. 180, *confusa*, p. 181, Bahia, GROUVELLE, Ann. Soc. ent. France, 1896, n. spp.
- Platynema ritsemai*, Sumatra, GROUVELLE, p. 347, Ann. Mus. Genova, xxxviii, n. sp.
- Prometopia dorsalis*, Sumatra, p. 363, *suturalis*, Perak, p. 364, *obscura*, Sumatra, p. 365, GROUVELLE, *t. c.*, n. spp.
- Pseudoischæna*, n. g., near *Ischæna*, for *P. longula*, n. sp., Sumatra, GROUVELLE, p. 349, *t. c.*
- Rhizophagus oblongicollis* (= *punctulatus* Guill.), CHAMPION, p. 278, Ent. Mag. xxxiii. *R. punctiventris*, characters, REITTER, p. 78, Wien. ent. Zeit. xvi.
- R. punctulatus*, Nantua, GUILLEBEAU, p. 226, Bull. Soc. ent. France, 1897 ; *R. magniceps*, Caucasus, REITTER, p. 123, Wien. ent. Zeit. xvi : n. spp.
- Soronia minuta*, Brazil, GROUVELLE, p. 178, Ann. Soc. ent. France, 1896, n. sp.
- Stauroglossicus variabilis*, Malacca, p. 354, *dubitabilis*, Burma, p. 355, *opaculus*, Java, p. 356, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Trimenus piceus*, Sumatra, GROUVELLE, p. 348, *t. c.*, n. sp.

## TROGOSITIDÆ.

- Xenoglena vicina*, p. 202, *chrysobothroides*, p. 203, Malacca, LÉVEILLÉ, Bull. Soc. ent. France, 1897, n. spp.

## COLYDIIDÆ.

- [*Cf.* CASEY (162), GROUVELLE (440, 441), KOLBE (601), PIC (850), REITTER (903).]

- Aditoma*, n. g., for *A. bifida*, n. sp., Florida, CASEY, p. 630, Ann. N. York Ac. ix.
- Atyscus ovatus*, Sumatra, GROUVELLE, p. 376, Ann. Mus. Genova, xxxviii, n. sp.
- Bitoma suffusa*, Arizona, CASEY, p. 631, Ann. N. York Ac. ix, n. sp.
- Bothrideres modiglianii*, p. 383, *bouchardi*, p. 384, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Bupalia elongata*, Sumatra, GROUVELLE, p. 381, t. c., n. sp.
- Cassidoloma*, n. g., *Discolomini*, for *C. discoidea*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 113.
- Cuatomus crassus*, p. 391, *striatus*, p. 392, *singularis*, p. 393, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Cerylon usambicum*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 112; *C. bouchardi*, p. 384, *piliger*, p. 385, Sumatra, *exiguum*, Engano, *beccarii*, p. 386, *angulosum*, p. 387, *punctum*, Sumatra, *pilosum*, Tenasserim, p. 388, GROUVELLE, Ann. Mus. Genova, xxxviii; *C. sylvaticum*, p. 635, *sticticum*, *clypeale*, p. 636, North America, CASEY, N. York Ac. ix : n. spp.
- Colobicus seriatus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 112, n. sp.
- Corticus syriacus*, var. n., *latus*, PIC, p. 5, Echange, 1897.
- C. rotundicollis*, Algeria, PIC, p. 78, Bull. Soc. ent. France, 1897, n. sp.
- Discogenia*, n. g., *Discolomini* for *D. disciformis*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 112.
- D. rufipes*, Zanzibar, KOLBE, t. c., p. 111; *D. gounellei*, Bahia, GROUVELLE, p. 185, Ann. Soc. ent. France, 1896 : n. spp.
- Eucicones latus*, N. America, CASEY, p. 633, Ann. N. York Ac. ix; *E. gounellei*, Bahia, GROUVELLE, p. 186, Ann. Soc. ent. France, 1896 : n. spp.
- Eumecidium*, n. g., near *Aprostoma* for *E. glabriceps*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, Col., iv, p. 110.
- Hyberis multifusculatus*, p. 376, *crassus*, *brevicornis*, p. 377, *bouchardi*, *fasciculatus*, p. 378, *modiglianii*, p. 379, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Labrominus raffrayi*, *squamosus*, Sumatra, GROUVELLE, p. 380, Ann. Mus. Genova, xxxviii, n. spp.
- Lennis tuberosus*, Brazil, GROUVELLE, p. 187, Ann. Soc. ent. France, 1896, n. sp.
- Lepidosynchis*, n. g., *Synchitini* for *L. albosetosa*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 111.
- Nematidium angustatum*, Sumatra, GROUVELLE, p. 382, Ann. Mus. Genova, xxxviii, n. sp.
- Neotrichus bicolor*, Brazil, GROUVELLE, p. 195, Ann. Soc. ent. France, 1896; *N. crassus*, Sumatra, GROUVELLE, p. 382, Ann. Mus. Genova, xxxviii : n. spp.
- Pachyochthes*, n. g., p. 248, *Cerylonides*, for *P. edithæ*, n. sp., Ordubad, p. 249, pl. iii, fig. 4, REITTER, Wien. ent. Zeit. xvi.
- Penthelias angusticollis*, Sumatra, GROUVELLE, p. 383, Ann. Mus. Genova, xxxviii, n. sp.
- Pseudocerylon*, n. g., *Cerylonini* for *P. trimaculatum*, p. 389, *bicolor*, *bouchardi*, p. 390, Sumatra, n. spp., GROUVELLE, t. c.
- Sosylus extensus*, Texas, CASEY, p. 633, Ann. N. York Ac. ix, n. sp.
- Syncolydium*, n. g., near *Colydium* for *S. glabratum*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, Col., iv, p. 110.
- Ulonotus brasiliensis*, Minas Geraes, GROUVELLE, p. 185, Ann. Soc. ent. France, 1896, n. sp.



## CUCUJIDÆ.

- [*Cf.* BLACKBURN (79), GANGLBAUER (1205), GROUVELLE (440, 441).]
- Hemipeplus gounellei*, Bahia, GROUVELLE, p. 189, Ann. Soc. ent. France, 1896; *H. insularis*, St. Domingo, p. 196, *mexicanus*, Mexico, GROUVELLE, *t. c.* : n. spp.
- Inopeplus nigrutilus*, Minas Geraes, GROUVELLE, p. 190, *t. c.*; *I. frater*, Sumatra, GROUVELLE, p. 393, Ann. Mus. Genova, xxxviii : n. spp.
- Læmophlaus*, table of S. American, GROUVELLE, p. 202, Ann. Soc. ent. France, 1896; *L. minutus* Ol. (= *pusillus* Sch.), BEDEL, p. 35, Abeille, xxix.
- L. Kraussi*, Styria, GANGLBAUER, p. 569, Verh. Ges. Wien, 1897; *L. bimaculosus*, Engano, *marie*, p. 394, *glabriculus*, p. 395, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii; *L. gounellei*, p. 190, *deletus*, p. 191, Bahia, GROUVELLE, Ann. Soc. ent. France, 1896; *L. germaini*, p. 200, *nigrirostris*, *quinquearticulatus*, p. 201, S. America, GROUVELLE, *t. c.* : n. spp.
- Nausibius*, table of American, GROUVELLE, p. 209, Ann. Soc. ent. France, 1896.
- N. ingens*, p. 191, *elongatus*, p. 192, *tenebrionoides*, p. 193, Brazil, GROUVELLE, *t. c.*; *N. gigas*, *sahlbergi*, p. 206, *lobatus*, p. 207, *inermis*, p. 208, Brazil, GROUVELLE, *t. c.* : n. spp.
- Pediatus ater*, Sumatra, GROUVELLE, p. 396, Ann. Mus. Genova, xxxviii, n. sp.
- Phlæostichus denticollis*, larva, WEISE, p. 393, Deutsche ent. Zeitschr. 1897.
- Prostomis intermedius*, Australia, BLACKBURN, p. 88, Tr. R. Soc. S. Austral. xxi, n. sp.
- Rhinomalus vicinus*, Mexico, p. 197, *subfasciatus*, *facetus*, *germaini*, p. 198, *fulvicollis*, p. 199, S. America, GROUVELLE, Ann. Soc. ent. France, 1896 : n. spp.
- Silvanus gossypii*, in Indian cotton seed, CHITTENDEN, p. 13, Bull. Dep. Agric. Ent. viii; *S. granosus*, p. 396, *levicollis*, *cribricollis*, p. 397, *tenuicollis*, p. 398, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Telephanus sahlbergi*, Tijuca, GROUVELLE, p. 188, Ann. Soc. ent. France, 1896, n. sp.
- Tristaria gounellei*, Bahia, GROUVELLE, p. 193, *t. c.*, n. sp.

## CRYPTOPHAGIDÆ.

- Cryptophagus hamatus*, p. 560, *pumilio*, p. 561, *deubeli*, *silesiacus*, p. 562, *transsilvanicus*, p. 563, *straussi*, p. 564, Centr. Europe, GANGLBAUER, Verh. Ges. Wien, 1897; *C. dorsaliformis*, East Siberia, REITTER, p. 212, Deutsche ent. Zeitschr. 1897 : n. spp.
- Telmatophilus sparganii*, ♂ characters, CHAMPION, p. 214, Ent. Mag. xxxiii.

## LATHRIDIIDÆ and MONOTOMIDÆ.

Systematic revision of the family *Lathridiidae* and catalogue of the species, BELON, Rev. Ent. franc. 1897, pp. 105-221.

*Abothria*, subg. n. of *Corticaria*, BELON, p. 147, Rev. Ent. franc. 1897.

*Adasia*, subg. n. of *Corticaria*, BELON, p. 147, *t. c.*

*Brevina*, subg. n. of *Corticaria*, BELON, p. 147, *t. c.*

*Cartodere gounellei*, *bicarinata*, Chili, BELON, p. 137, *t. c.* n. spp.

*Epipeda*, subg. n. of *Corticaria*, BELON, p. 147, *t. c.*

*Eporus*, n. g., near *Europs*, for *E. insignis*, n. sp., Assam, GROUVELLE, p. 374, Ann. Mus. Genova, xxxviii.

*Europa*: cf. *Nitidulidæ*.

*Merophysia bicarinata*, Transcaspien, REITTER, p. 212, Deutsche ent. Zeitschr. 1897, n. sp.

*Metatypus*, n. g. near *Cartodere*, for *parviceps* Lec. etc., BELON, p. 124, Rev. Ent. franc. 1897.

*Mimemodes insulare*, Sumatra, GROUVELLE, p. 375, Ann. Mus. Genova, xxxviii, n. sp.

### MYCETOPHAGIDÆ.

*Mycetophagus quadripustulatus*, var. CHAMPION, p. 44, Ent. Mag. xxxiii.

*Symbiotes*, Redt. (= *Microchondrus* Woll. and *Eponomastus* Buyss.), BEDEL, p. 35, Abeille, xxix.

*Tritoma jarooslavensis*, p. 547, *tachitscherini*, p. 549, Caucasus, SEMENOW, Horæ Soc. ent. Ross. xxxi; *T. ciscaucasica*, Caucasus, SEMENOW, p. 596, Horæ Soc. ent. Ross. xxxi; *T. lederi*, Irkutsk, REITTER, p. 228, Deutsche ent. Zeitschr. 1897 : n. spp.

### THORICTIDÆ.

*Thorictus mecheriensis*, Algeria, PIC, p. 232, Bull. Soc. zool. France, 1897; *T. fece*, Burma, GROUVELLE, p. 398, Ann. Mus. Genova, xxxviii : n. spp.

### DERMESTIDÆ.

[Cf. CHOBOUT (180), FAIRMAIRE (305), FALL (316).]

*Dermestidæ* living on vegetable foods, CHITTENDEN, pp. 15-24, Bull. Dep. Agric. Ent. viii.

Notes on the distinctions of larvæ of species of *Anthrenus*, VOGLER, pp. 683-686, Illustr. Zeitschr. Ent. ii.

Anatomy of alimentary canal of *Anthrenus* larva, MOBISZ (755).

The scales of *Anthrenus*, VOGLER (1134).

*Æthriotoma fasciolata*, Madagascar, FAIRMAIRE, p. 97, Ann. Soc. ent. Belgique, xli, n. sp.

*Anthrenus (Anthrenops) bellulus*, Algeria, CHOBOUT, p. 277, Bull. Soc. ent. France, 1897, n. sp.

*Attagenus piceus*, larval food-habits, CHITTENDEN, pp. 15-19, Bull. Dep. Agric. Ent. viii.

*Dermestes tristis*, S. California islands, FALL, p. 244, Canad. Ent. xxix, n. sp.

*Tiresias serra*, larval food, DONISTHORPE, p. 162, Ent. Record, 1897.

### BYRRHIDÆ and GEORYSSIDÆ.

*Curimus erichsoni*, metamorphoses, WEISE, p. 391, Deutsche ent. Zeitschr. 1897.

*Limnichus rufulopubens*, Madagascar, FAIRMAIRE, p. 368, Ann. Soc. ent. Belgique, xli, n. sp.

*Georyssus crenulipennis*, Madagascar, FAIRMAIRE, p. 369, t. c. n. sp.

### PARNIDÆ.

[Cf. FAIRMAIRE (305), GROUVELLE (439, 440), KOLBE (601), REITTER (898).]

*Elmidolia*, n. g. for *E. sericans*, n. sp., Madagascar, FAIRMAIRE, p. 369, Ann. Soc. ent. Belgique, xli.

*Elmis perrieri*, Madagascar, FAIRMAIRE, p. 98, t. c.; *E. subulcatus*, *nitidulus*, Madagascar, FAIRMAIRE, p. 369, t. c. : n. spp.

- Helichus brasiliensis*, Theresopolis, GROUVELLE, p. 214, Ann. Soc. ent. France, 1896, n. sp.
- Helmis maugei*, var. (= *rioloides*, Kuw.), *H. obscura* (= *croatica* Kuw.), GROUVELLE, p. 206, Bull. Soc. ent. France, 1897.
- H. flavitarsis*, Uruguay, GROUVELLE, p. 9, An. Mus. Buenos Aires, v, n. sp.
- Parnus schneideri*, Borkum, REITTER, p. 46, Wien. ent. Zeit. xvi, n. sp.
- Parygrus angustatus*, Theresopolis, GROUVELLE, p. 215, Ann. Soc. ent. France, 1896, n. sp.
- Pelonomus curvipes*, Minas Geraes, GROUVELLE, p. 194, t. c. n. sp.
- Pelonomus pubescens* and *simplex* characters, GROUVELLE, p. 7, An. Mus. Buenos Aires, v.
- P. bergi*, Uruguay, *id.*, p. 6, t. c. n. sp.
- Phanocerus sharpi*, Uruguay, GROUVELLE, p. 8, An. Mus. Buenos Aires, v, n. sp.
- Pomatinus gigas*, Brazil, GROUVELLE, p. 216, t. c. n. sp.
- Potamodytes major*, Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col., n. sp.
- Potamophilus abdominalis* ♀, FAIRMAIRE, p. 98, Ann. Soc. ent. Belgique, xli.
- Stenelmis puberula* (= *apfelbecki* Kuw.), GROUVELLE, p. 206, Bull. Soc. ent. France, 1897.

## HETEROCERIDÆ.

- Heterocerus fossor*, var. (= *apfelbecki*, Kuw.), GROUVELLE, p. 206, Bull. Soc. ent. France, 1897.
- H. scutellaris*, Algeria, GUILLEBEAU, p. 163, Bull. Soc. ent. France, 1897, n. sp.

## PASSALIDÆ.

- Dichotomous tables of the species of *Passalidæ*, KUWERT, Nov. Zool. iv, pp. 274–306.
- Passalus cornutus* and *distinctus*, note, CASEY, p. 648, Ann. N. York Ac. ix.
- Paxillus parvus*, Honduras, CASEY, p. 644, t. c., n. sp.
- Proculejoides crassulus*, Honduras, CASEY, p. 642, t. c., n. sp.
- Proculus magister*, Honduras, CASEY, p. 641, t. c., n. sp.
- Rimor munitus*, Mexico, CASEY, p. 643, t. c., n. sp.
- Soranus imbellis*, Mexico, CASEY, p. 645, t. c., n. sp.
- Verres vernicatus*, Honduras, p. 646, *cavilabris*, Mexico, p. 647, CASEY, t. c., n. sp.

## LUCANIDÆ.

- [Cf. BLACKBURN (80), BOILEAU (88–92), CASEY (162), JAKOWLEW (541), KOLBE (604), PLANET (871), RITSEMA (935).]
- Ægotypus lobicolis*, Borneo, JAKOWLEW, p. 240, Horæ Soc. ent. Ross. xxxi ; *Æ. armatus*, Borneo, BOILEAU, p. 287, cuts, Bull. Soc. ent. France, 1897 : n. spp.
- Ægus insolitus*, Mindoro, p. 241, *oxygonus*, Borneo, p. 243, JAKOWLEW, Horæ Soc. ent. Ross. xxxi ; *Æ. bigibbosus*, Sumatra, RITSEMA, p. 185, Notes Leyden Mus. xix : n. spp.
- Calodæmon*, n. g. for *C. multicolor*, n. sp., Bolivia, BOILEAU, p. 248, Naturaliste, 1897.
- Cantharolethrus azambrei*, Ecuador, BOILEAU, p. 275, t. c., n. sp.
- Ceratognathus frenchi*, Victoria, BLACKBURN, p. 28, Tr. R. Soc. S. Austral. xxi, n. sp.
- Eurytrachelus rama*, Sumatra, BOILEAU, p. 181, Naturaliste, 1897, n. sp.

- Lucanus cervus*, var. n., *poujadei*, PLANET, p. 267, cut, Naturaliste, 1897.  
*L. cervus*, var. n., *syriaca*, PLANET, p. 64, cut, Bull. Soc. ent. France, 1897. *L. orientalis*, *tetraodon turcicus*, characters, PLANET, pp. 83, 98, 171, etc., figg., Naturaliste, 1897.  
*Lucanus oberthuri*, p. 179, *boileavi*, pp. 205, 226, Tibet, PLANET, Naturaliste, 1897; *L. fairmairei*, Tibet, PLANET, p. 265, t. c. : n. spp.  
*Metopodontus planeti*, Congo, BOILEAU, p. 287, Natural. 1897, n. sp.  
*Nigidius kinabaluensis*, Borneo, RITSEMA, p. 187, Notes Leyden Mus. xix, n. sp.  
*Odontolabis leuthneri*, Borneo, BOILEAU, p. 247, cut, Natural. 1897, n. sp.  
*Platycerus chalybeus*, *marginalis*, N. America, CASEY, p. 639, Ann. N. York Ac. ix, n. spp.  
*Prosopocetus fruhstorferi*, Lombok, p. 10, *camarunus*, Africa, p. 12, KOLBE, Ent. Nachr. xxiii, n. spp.  
*Pseudolucanus groulti*, India, PLANET, p. 227, Naturaliste, 1897, n. sp.

## SCARABÆIDÆ.

[The titles indicated by the following numbers refer to *Scarabæidæ*, viz. :—  
 BLACKBURN (79, 80), BRANČIK (124), BRENSKE (128, 129, 130), CLOUET (186), ESCHERICH (299), FABRE (303), FAIRMAIRE (305–310, 312), HELLER (467, 470, 472), JACOBSON (532), KOLBE (601, 602), KRAATZ (627, 638), LINELL (686), D'ORBIGNY (800), REITTER (899, 900, 902, 910, 912, 914), RITSEMA (931, 933), SCHWARZ (991), SEMENOW (1003), SHIPP (1011–1013, 1028), WATERHOUSE (1171): for *Cetoniini*, see p. 118.]

*Coprini*.

- Habits of Mediterranean *Coprides*, FABRE, Souvenirs, v, Chapp. i–xii.  
*Aphengium cupreum*, Espirito Santo, SHIPP, p. 187, Nov. Zool. iv, n. sp.  
*Aphodini*, notes on classification of and on D'Orbigny's synopsis, REITTER, pp. 73–76, Wien. ent. Zeit. xvi.  
*Aphodius barbarus*, Fairm. (= *irritans*, Reitt.), REITTER, p. 217, Wien. ent. Zeit. xvi. *A. irritans*, Reitt. = *barbarus*, Fairm., CLOUET, p. 15, Bull. Soc. ent. France, 1897. *A. multiplex*, n. n. for *granulifrons*, Reitter, REITTER, p. 241, t. c.  
*A. (Orodalus) reitterianus*, Switzerland, SCHWARZ, p. 32, Wien. ent. Zeit. xvi; *A. (Nialus) kocæ*, Sclavonia, REITTER, p. 204, Wien. ent. Zeit. xvi; *A. (Volinus) transvolgensis*, Russia, p. 597, *A. scuticollis* (= *nigrovittis*, Reitt. nec Solsky), p. 598, SEMENOW, Horæ Soc. ent. Ross. xxxi; *A. troitzkyi*, Centr. Siberia, JACOBSON, p. 87, Horæ Soc. ent. Ross. xxxi; *A. tenuitarsis*, p. 98, *pictipennis*, p. 99, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *A. atomus*, Madagascar, FAIRMAIRE, p. 370, t. c.; *A. smithi*, E. Africa, SHIPP (1028), p. 451; *A. victoriæ*, Australia, BLACKBURN, p. 88, Tr. R. Soc. S. Austral. xxi : n. spp.  
*Catharnius australis*, Darling Range, SHIPP, p. 152, Nov. Zool. iv, n. sp.  
*Cheironitis stuhlmanni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 147, pl. 1, fig. 9, n. sp.  
*Copris hispanicus*, habits and life-history, FABRE, Souvenirs, v, Chapp. vii, viii.  
*C. nepticulus*, Zanzibar, KOLBE, p. 82, Mt. Mus. Hamburg, xiv; *C. interioris*, p. 143, *nepticulus*, p. 144, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *C. convexiusculus*, E. Africa, SHIPP (1028), p. 450 : n. spp.  
*Diastellopalpus castaneus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 148, n. sp.  
*Eremazus* and *Millingenia*, synonymical note, CLOUET, p. 14, Bull. Soc. ent. France, 1897.

- Eremasus*: monograph, CLOUET, pp. 264–271, Ann. Soc. ent. Belgique, xli.
- E. sefrensis*, Algeria, *id. t. c.* p. 267, n. sp.
- Geotrupes stercorarius*, habits, life-histories, FABRE, Souvenirs, v, Chapp. x–xii.
- G. substriatellus*, Szé-tchouen, FAIRMAIRE, p. 242, Notes Leyden Mus. xix, n. sp.
- Gymnopleurus*: list of species, SHIPP (1011). *G. splendens*, var. n. KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 138.
- Heliocopris coryndonii*, Loangwa, p. 185, *exclamationis*, Sierra Leone, p. 186, SHIPP, Nov. Zool. iv; *H. donaldsoni*, p. 448, *coriaceus*, p. 449, E. Africa, SHIPP (1028) : n. spp.
- Hybalus ramicornis* and *tricornis* distinguished, BEDEL, p. 35, Abeille, xxix.
- Hybomidium*, n. n. for *Hyboma*, Serv., SHIPP, p. 195, Ent. Nachr. xxiii.
- Lethrus gladiator*, Altai, REITTER, p. 213, Deutsche ent. Zeitschr. 1897; *L. (Microlethrus) inermis*, Bukhara, REITTER, p. 235, *t. c.* n. spp.
- Ochodæus miliaris*, var. (= *canellinus*, *infuscatus*, Fairm.), FAIRMAIRE, p. 100, Ann. Soc. ent. Belgique, xli.
- O. grandiceps*, Szé-tchouen, FAIRMAIRE, p. 241, Notes Leyden Mus. xix, n. sp.
- Onitis lunaris*, *subcrenatus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, p. 145, n. spp.
- Onthophagus vitulus*, Fab. (= *camelus*, Fab.), BEDEL, p. 35, Abeille, xxix.
- O. truchmenus*, var. n. *latiplaga*, REITTER, p. 219, Wien. ent. Zeit. xvi.
- O. formaneki*, Araxes Valley, REITTER, p. 204, Wien. ent. Zeit. xvi; *O. maindroni*, Obock, p. 232, *brisouti*, Europe, *abeillei*, Obock, p. 233, *latigena*, Spain, p. 234, *opacicollis*, Mediterranean, p. 236, *dorso-signatus*, Trebizond, p. 237, *latipennis*, p. 238, *martini*, Africa, Arabia, *brevicavatus*, India, p. 239, *ochreateus*, Africa, Asia, *incertus*, p. 241, *semicinctus*, p. 242, *O. (Phalops) cyaneus*, p. 243, India, D'ORBIGNY, Ann. Soc. ent. France, 1897; *O. lutosopictus*, Ishigaki-Sima, FAIRMAIRE, p. 69, Bull. Soc. ent. France, 1897; *O. smilhi*, E. Africa, SHIPP (1028), p. 450; *O. regulus*, Madagascar, BRANCSIK, p. 111, Jahresh. Ver. Trencsen. xix : n. spp.
- Orphnus distinctus*, n. n. for *O. hova*, Fairm. nec *owas*, Westw., FAIRMAIRE, p. 100, Ann. Soc. ent. Belgique, xli.
- Paragymnopleurus*, n. g., Type *sinuatus*, Fab., SHIPP, p. 166, Ent. 1897.
- Pedaria setulosa*, Zambesi, BRANCSIK, p. 110, Jahresh. Ver. Trencsen. xix, n. sp.
- Phæochrous insularis*, Aldabra island, LINELL, p. 699, P. U. S. Mus. xix, n. sp.
- Proctammodus minor*, Victoria, BLACKBURN, Tr. R. Soc. S. Austral. xxi, n. sp.
- Psammodius sculpticollis*, Madagascar, FAIRMAIRE, p. 370, Ann. Soc. ent. Belgique, xli, n. sp.
- Rhypparus birmanicus*, Burma, FAIRMAIRE, Notes Leyden Mus. xix, p. 210, n. sp.
- Scarabeus sacer*, habits and life history, FABRE, Souvenirs, v, chapp. i–vi.
- S. bettoni*, E. Africa, WATERHOUSE, p. 553, Ann. Nat. Hist. xx, n. sp.
- Spinigymnopleurus*, n. g., Type *tristis*, Cast., SHIPP, p. 168, Entomologist, 1897.
- Sybacodes lutulentus*, var. n., *alternatus*, FAIRMAIRE, p. 211, Notes Leyden Mus. xix.
- Synapsis*, the species, FAIRMAIRE, p. 117, Bull. Soc. ent. France, 1897.
- S. sumatrensis*, Palembang, FAIRMAIRE, p. 25, Bull. Soc. ent. France, 1897, n. sp.

*Synarmostes basicollis*, p. 99, *obscuroneus*, p. 100, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *S. perroti*, Madagascar, WASMANN, p. 272, Deutsche ent. Zeitschr. 1897 : n. spp.  
*Trox*: the stridulating organs, SHARP, p. 206, Ent. Mag. xxxiii.

### Glaphyrini.

*Amphicoma regeli*, var. n., *iris*, REITTER, p. 125, Wien. ent. Zeit. xvi.

### Melolonthini.

Value of prothoracic membrane in classification, BRENSKE, p. 354, Berlin. ent. Zeitschr. 1896.

Larvæ of *Melolontha*, *Rhizotrogus*, *Phyllopertha*, distinguished by their mandibles, WARBURTON (1148).

*Ablabera bagamojana*, Africa, BRENSKE, p. 106, Ent. Zeit. Stettin, lviii, n. sp.

*Aglaphyra*, n. g., *Leptopodides*, p. 360, for *A. setosa*, n. sp., E. Africa, p. 361, BRENSKE, Berlin, ent. Zeitschr. 1896.

*Anomolyna*, n. g., near *Pachycolus*, p. 106, for *A. picticollis*, n. sp., Madagascar, p. 107, FAIRMAIRE, Ann. Soc. ent. Belgique, xli.

*Apogonia*: table of the species, HELLER, Abh. Mus. Dresden, vi, No. 10, pp. 3-10.

*A. viridifulva*, p. 189, *rizali*, p. 191, Philippines, HELLER, Notes Leyden Mus. xix; *A. hopei*, p. 117, Madras, *orbitalis*, Malacca, p. 118, *bremskei*, Burma, p. 119, *oberthurii*, Palawan, p. 121, *magnifica*, p. 122, *adoretoides*, p. 123, Philippines, RITSEMA, Notes Leyden Mus. xix; *A. tuberculiventris*, Borneo, RITSEMA, p. 131, t. c.; *A. pulchra*, p. 10, *pseudomaura*, *glabricollis*, p. 11, *difficilis*, *cephalus*, p. 12, *varievestis*, *heterosquamulata*, p. 13, *soror*, *kolbei*, p. 14, *subpilosula*, p. 15, *gracilipes montivaga*, p. 16, *eremita*, p. 17, *marginata*, *lutescutellata*, p. 18, Celebes, *saleijana*, Saleijer, p. 19, *vastratris*, p. 20, Celebes, HELLER, Abh. Mus. Dresden, vi, No. 10 : n. spp.

*Brahmina fulgida*, *plagiatus*, N. India, BRENSKE, p. 351, Berlin. ent. Zeitschr. 1896, n. spp.

*Camenta longiclava*, Sierra Leone, BRENSKE, p. 99, Ent. Zeit. Stettin, lviii; *C. bohemani*, Natal, BRENSKE, p. 339, Berlin. ent. Zeitschr. 1897 : n. spp.

*Clitopa læviplagiata*, E. Africa, KOLBE, p. 84, pl. fig. 4, Mt. Mus. Hamburg, xiv, n. sp.

*Cyphonotus*: notes, distribution, BRENSKE, pp. 315-317, Berlin. ent. Zeitschr. 1896.

*Cyphonoxia bremskei* (= *glasunowi* Sem.), REITTER, p. 78, Wien. ent. Zeit. xvi.

*Cyrtocamenta*, n. g., near *Abladera* for *C. pygmaea*, Senegal, p. 104, *flavescens*, Abyssinia, p. 105, *rubra*, S. Africa, p. 106, n. spp., BRENSKE, Ent. Zeit. Stettin, lviii.

*Diaclaspus*, n. g., *Leptopodides*, p. 359, for *D. delagoensis*, n. sp., Delagoa Bay, p. 360, BRENSKE, Berlin. ent. Zeitschr. 1896.

*Dicentrines tessera*, Madagascar, FAIRMAIRE, p. 375, Ann. Soc. ent. Belgique, xli, n. sp.

*Diphucephala kershawi*, Victoria, BLACKBURN, p. 89, Tr. R. Soc. S. Austral. xxi, n. sp.

*Ectinoplia triplagiata*, Tibet, FAIRMAIRE, p. 211, Notes Leyden Mus. xix; *E. nigrotincta*, Szé-tchouen, FAIRMAIRE, p. 243, t. c. : n. spp.

*Empecanota variolosa*, p. 100, *sierra-leonis*, p. 101, W. Africa, *abyssinica*, *Erythraea*, p. 102, BRENSKE, Ent. Zeit. Stettin, lviii; *E. boromensis*, Zambesi, BRANCSIK, p. 113, pl. iv, fig. 4, Jahresh. Ver. Trencsen. xix : n. spp.

- Empecta atomaria*, Madagascar, FAIRMAIRE, p. 376, Ann. Soc. ent. Belgique, xli, n. sp.
- Hemicamenta*, n. g., for *H. theryi*, n. sp., Sierra Leone, BRENSKE, p. 103, Ent. Zeit. Stettin, lviii.
- Hemictenius*, n. g., for part of *Pachydema*, p. 222, with *H. magnitarsis*, p. 223, *nigroclitatus*, p. 224, *simplicitarsis*, p. 225, n. spp., Afghanistan, REITTER, Wien. ent. Zeit. xvi.
- Holotrichia sichotana*, Wladiwostock, p. 343, with var. *amurensis*, p. 344, *assamensis*, Assam, p. 345, *simlana*, India, p. 346, *sumbawana*, Sumbawa, *luteosericea*, Kurseong, p. 347, *flavosericea*, Sikkim, p. 348, *tenasserima*, p. 349, *pilosa*, p. 350, Tenasserim, BRENSKE, Berlin. ent. Zeitschr. 1896 : n. spp.
- Homalopia sieversi*, Caucasus, REITTER, p. 124, Wien. ent. Zeit. xvi; *H. abbreviata*, *discoidalis*, Szé-tchouen, FAIRMAIRE, p. 244, Notes Leyden Mus. xix; *H. granulipennis*, *picticollis*, Madagascar, FAIRMAIRE, p. 376, Ann. Soc. ent. Belgique, xli : n. spp.
- Homöoschiza flavescens*, Dar-es-Salaam, BRENSKE, p. 110, Ent. Zeit. Stettin, lviii, n. sp.
- Hoplia maculosa*, n. n., for *maculata*, Reitt. nec Bates, REITTER, p. 48, Wien. ent. Zeit. xvi.
- H. congoana*, Africa, BRENSKE, p. 96, Ent. Zeit. Stettin, lviii, *H. fulvovittis*, Zambesi, BRANCSIK, p. 111, Jahresh. Ver. Trencsen. xix; *H. plagulata*, p. 101, *angulopicta*, *impressidorsis*, p. 102, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *H. multifasciata*, p. 371, *validipes*, *vitticollis*, p. 372, *atropicta*, *velutina*, p. 373, *biapicata*, *fuscopunctata*, *griseosetosa*, *scutellata*, p. 374, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli : n. spp.
- Hovachelus*, n. g., p. 370, near *Monochelus*, for *H. oberthuri*, n. sp., Madagascar, p. 371, FAIRMAIRE, t. c.
- Lepidioderma* (sub *Lepidiota*) *scutellata*, MacL. (= *undata*, Br.), BRENSKE, p. 364, Berlin. ent. Zeitschr. 1896.
- Megistophylla junghuhnii*, Sumatra, BRENSKE, p. 114, Ent. Zeit. Stettin, lviii, n. sp.
- Melolontha vulgaris* in Sweden, statistics for years 1885–1895, LYTTEKENS, pp. 97–107, Ent. Tidskr. 1897.
- Odontoplia*, n. g., p. 100, near *Hoplia*, for *O. alluandi*, n. sp., Madagascar, p. 101, FAIRMAIRE, Ann. Soc. ent. Belgique, xli.
- Omalopia pernitida*, Madagascar, FAIRMAIRE, p. 103, t. c., n. sp.
- Ootoma bipartita* (= *Pachydema africana*, Brenske), HEYDEN, p. 416, Deutsche ent. Zeitschr. 1897.
- Oreotrogus*, n. g., near *Lecanotrogus*, for *O. volkensi*, n. sp., E. Africa, KOLBE, Deutsch-Ost-Africa, Col. iv, p. 165.
- Otoclinius*, n. g. *Elaphocerides*, for *O. gracilipes*, n. sp., Beluchistan, BRENSKE, p. 320, Berlin. ent. Zeitschr. 1896.
- Pachycheta*, n. g., *Pachydemides*, for *P. flavomicans*, n. sp., Jerusalem, BRENSKE, p. 362, Berlin. ent. Zeitschr. 1896.
- Pachycolus capillatus*, Madagascar, BRENSKE, p. 355, t. c., n. sp.
- Pachydema ganglbaueri*, Persia, p. 115, *africana*, Las Palmas, p. 117, *P. (Phygotoxeuma, subg. n.) theryi*, Algeria, p. 118, BRENSKE, Ent. Zeit. Stettin, lviii; *P. bucharica*, p. 221, *suturifera*, p. 222, Bukhara, REITTER, Wien. ent. Zeit. xvi : n. spp.
- Pachygastra victoriae*, Australia, BLACKBURN, p. 90, Tr. R. Soc. S. Austral. xxi, n. sp.
- Pentacamenta*, n. g., near *Camenta*, p. 341, for *P. salaama*, E. Africa *kinabaluenensis*, Borneo, n. spp., p. 342, BRENSKE, Berlin. ent. Zeitschr. 1896.
- Periclitopa*, n. g., *Leptopodides*, for *P. fischeri*, n. sp., Transvaal, BRENSKE, p. 358, t. c.

- P. brenskei*, Zambesi, BRANCSIK, p. 114, pl. iv, fig. 6, Jahresh. Ver. Trönsen. xix, n. sp.
- Phalangonyx*, related to *Pachydema*, REITTER, p. 221, Wien. ent. Zeit. xvi.
- Phiara*, n. g., p. 107, *Schizonychides*, for *P. flava*, n. sp., SEMMAR, p. 108, BRENSKE, Ent. Zeit. Stettin, lviii.
- Phila*, n. g., p. 110, *Leucopholides*, for *P. amboinae*, n. sp., Amboina, p. 111, BRENSKE, t. c.
- Photyna*, n. g., *Sericoides*, for *P. rugicollis*, p. 97, *tomentosa*, p. 98, n. spp., China, BRENSKE, t. c.
- Phygotoxema*, subg. n., cf. *Pachydema*.
- Proteroschiza*, n. g., *Schizonychides*, for *P. wituensis*, n. sp., E. Africa, BRENSKE, p. 353, Berlin. ent. Zeitschr. 1896.
- Pseudolontha*, n. g., p. 211, between *Melolonthides* and *Rhizotrogides*, for *P. cuniculata*, p. 212, Tibet, *gononii*, p. 213, China, n. spp., FAIRMAIRE, Notes Leyden Mus. xix.
- Rhizotrogus escherichi*, Asia Minor, BRENSKE, p. 21, Ent. Zeit. Stettin, lviii; *R. (Amphimallus) beludschistanus*, Beluchistan, BRENSKE, p. 318, Berlin. ent. Zeitschr. 1897 : n. spp.
- Schizonycha Kolbei*, Dar-es-Salaam, BRENSKE, p. 109, Ent. Zeit. Stettin, lviii; *S. amitina*, E. Africa, KOLBE, p. 84, Mt. Mus. Hamburg, xiv; *S. amitina*, Bagamoyo, KOLBE, Deutsch-Ost-Afrika, iv, p. 349; *S. natalensis*, n. sp., S. Africa, BRENSKE, p. 352, Berlin. ent. Zeitschr. 1896 : n. spp.
- Schönherria squamulifera*, Java, BRENSKE, p. 112, Ent. Zeit. Stettin, lviii; *S. clypeata*, Celebes, HELLER, p. 21, Abh. Mus. Dresden, vi, No. 10 : n. spp.
- Serica koltzei*, Wladiwostock, REITTER, p. 214, Deutsche ent. Zeitschr. 1897; *S. zambesina*, Zambesi, BRANCSIK, p. 112, Jahresh. Ver. Trönsen. xix; *S. fusciceps*, Madagascar, FAIRMAIRE, p. 103, Ann. Soc. ent. Belgique, xli; *S. peticollis*, Madagascar, FAIRMAIRE, p. 375, t. c. : n. spp.
- Synclitopa*, n. g., *Pachypodina*, for *S. simulatrix*, n. sp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 169.
- Toxocerus riantii*, China, FAIRMAIRE, p. 243, Notes Leyden Mus. xix, n. sp.
- Triodonta lineolata*, p. 113, *boromensis*, p. 114, pl. iv, fig. 5, Zambesi, BRANCSIK, Jahresh. Ver. Trönsen. xix; *T. rufiga*, E. Africa, KOLBE, p. 84, pl. fig. 5, Mt. Mus. Hamburg, xiv; *T. hovani*, Madagascar, FAIRMAIRE, p. 103, Ann. Soc. ent. Belgique, xli : n. spp.

### *Rutelini.*

- Adoretus hystrix*, *sulcirostris*, p. 104, *discoidalis*, *insularis*, p. 105, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *A. subnervens*, *flavilabris*, p. 377, *eneopiceus*, *perrieri*, p. 378, *rufulus*, *pallidopictus*, p. 379, Madagascar, FAIRMAIRE, t. c.; *A. conularis*, E. Africa, KOLBE, p. 87, pl. fig. 2, Mt. Mus. Hamburg, xiv : n. spp.
- Anomala basalis*, Blanch. (= *Peripopillia oberthuri*, Kr.), KRAATZ, p. 333, Deutsche ent. Zeitschr. 1897; *A. circumcincta*, characters, REITTER, p. 79, Wien. ent. Zeit. xvi.
- A. separata*, p. 115, *discedens*, p. 116, Zambesi, BRANCSIK, Jahresh. Ver. Trönsen. xix; *A. contenta*, E. Africa, KOLBE, p. 86, Mt. Mus. Hamburg, xiv; *A. usambica*, *rufa*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 172; *A. sexoculata*, p. 213, *micans*, p. 214, Tibet, *sculpticollis*, China, p. 215, FAIRMAIRE, Notes Leyden Mus. xix : n. spp.
- Ichnopopillia purpuricollis*, Se Pin-Lou Chan, KRAATZ, p. 331, Deutsche ent. Zeitschr. 1897; *I. andrewesi*, India, id. t. c. p. 332, n. spp.
- Lutera striata*, Celebes, HELLER, p. 22, Abh. Mus. Dresden, vi, No. 10, n. sp.



- Phanomeris rufipennis*, Zambesi, BRANCSIK, p. 117, Jahresh. Ver. Trencsen. xix, n. sp.  
*Popillia flavoteniata*, note on, KRAATZ, p. 333, Deutsche ent. Zeitschr. 1897.  
*P. circumducta*, Liou-Kiou islands, p. 327, *lugubris*, p. 328, *puncticollis*, India, *plagicollis*, p. 329, Se Pin-Lou Chan, KRAATZ, Deutsche ent. Zeitschr. 1897; *P. ohausi*, E. Afrika, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 175 : spp.  
*Prodoretus tædiosus*, Madagascar, FAIRMAIRE, p. 106, Ann. Soc. ent. Belgique, xli, n. sp.  
*Stomanomala*, n. g., p. 85, for *S. epistomatica*, n. sp. Zanzibar, p. 86, pl., fig. 3, KOLBE, Mt. Mus. Hamburg, xiv; *Stomanomala*, n. g., near *Anomala*, for *S. epistomatica*, n. sp. Zanzibar, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 349.

### *Dynastini.*

- Asemantus leai*, W. Australia, BLACKBURN, p. 29, T. R. Soc. S. Austral. xxi, n. sp.  
*Camelonotus*, Fairm. (= *Neodipelicus* Rits. = *Palmerstonia* Blackb.), HELLER, p. 163, Notes Leyden Mus. xix.  
*C. quadratifer*, Ternate, p. 168, *alveolatus*, New Guinea, p. 169, *ritsemæ*, Saleyer, p. 171, *robustus*, Celebes, p. 172, with var. *moluccanus*, p. 173, HELLER, t. c. : n. spp.  
*Heteronychus bidentulus*, Fairm. referred to *Pentodon*, BEDEL, p. 35, Abeille, xxix.  
*H. infans*, E. Africa, KOLBE, p. 83, pl., Mt. Mus. Hamburg, xiv; *H. impressicollis*, *foveipennis*, Madagascar, FAIRMAIRE, p. 107, Ann. Soc. ent. Belgique, xli : n. spp.  
*Isodon novitius*, W. Australia, BLACKBURN, p. 28, Tr. R. Soc. S. Austral. xxi, n. sp.  
*Neohyphus celebesus* ♀, characters, HELLER, p. 23, Abh. Mus. Dresden, vi, No. 10.  
*Oryctes dollei*, Madagascar, FAIRMAIRE, p. 108, Ann. Soc. ent. Belgique, xli; *O. clypealis*, Madagascar, FAIRMAIRE, p. 380, t. c. : n. spp.  
*Phyllognathus prostomis*, S. Africa, FAIRMAIRE, p. 208, Notes Leyden Mus. xix, n. sp.  
*Xanthelæus*, n. g., near *Vertumnus*, for *X. plirifrons*, n. sp., Senegal, FAIRMAIRE, p. 109, Ann. Soc. ent. France, 1897.

### *Cetoniini.*

- [Cf. BRANCSIK (124), DISTANT (248), FAIRMAIRE (305, 309, 314), HELLER (467, 468, 471), KOLBE (601, 603), KRAATZ (622-624, 626, 629-636), LINELL (686), SCHOCH (974, 975).]  
 Notes on Schoch's "Catalogus systematicus and list of omissions," HELLER, pp. 49-55, Ent. Nachr. xxiii; Synonymy of Schoch's species, SCHOCH (974, 975).  
*Agestrata de haanii* and *orichalcea*, characters, *A. parryi* (= *lata* Richt.), KRAATZ, p. 410, Deutsche ent. Zeitschr. 1897.  
*Amaurodes passerinii*, var. n. *vitticollis*, KRAATZ, p. 252, Deutsche ent. Zeitschr. 1897; *A. passerinii*, var. n. *nigricans*, FAIRMAIRE, p. 110, Ann. Soc. ent. France, 1897.  
*Anatona atro-cerulea*, Ceylon, SCHOCH, p. 56, Mt. Schweiz. ent. Ges. x, n. sp.  
*Anoplochilus variabilis* (= *Onychotarsus ater* Schoch), KRAATZ, p. 404, Deutsche ent. Zeitschr. 1897.  
*Atenia cordata*, Borneo, SCHOCH, p. 467, Mt. Schweiz. ent. Ges. ix, n. sp.

- Atrichia bugnioni*, note, KRAATZ, p. 408, Deutsche ent. Zeitschr. 1897.
- Callynomes fairmairei*, India, p. 177, *anthracinus*, Sumatra, p. 179, HELLER, Notes Leyden Mus. xix; *C. helleri*, Szé-tchouen, FAIRMAIRE, p. 248, Notes Leyden Mus. xix : n. spp.
- Cetonia peregrina* (= *Anatona atrocærulea*, Schoch), KRAATZ, p. 402, Deutsche ent. Zeitschr. 1897.
- C. purpurascens*, Sikkim, KRAATZ, p. 405, Deutsche ent. Zeitschr. 1897, n. sp.
- Chordodera*: systematic position, KRAATZ, p. 248, Deutsche ent. Zeitschr. 1897.
- C. guttulata*, Cameroons, KRAATZ, p. 152, t. c. n. sp.
- Chromovalgus*, n. g., for *Valgus peyroni*, Muls. KOLBE, Ent. Zeit. Stettin, lviii.
- Clinteria vittigera*, Sumbava, SCHOCH, p. 462, Mt. Schweiz. ent. Ges. ix, n. sp.
- Comythovalgus*, n. g., p. 197, with *C. æmulus*, p. 199, *unicolor*, p. 200, n. spp. Cameroons, KOLBE, Ent. Zeit. Stettin, lviii.
- Cosmovalgus*, n. g., p. 204, for *C. conradti*, p. 205, *inornatus*, p. 206, n. spp. Cameroons, KOLBE, Ent. Zeit. Stettin, lviii.
- Cymophorus lacteosignatus squamosus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 349, n. spp.
- Deicasta nonfriedi*, Honduras, SCHOCH, p. 460, Schweiz. ent. Ges. ix, n. sp.
- Dialithus magnificus*, note, KRAATZ, p. 326, Deutsche ent. Zeitschr. 1897.
- Diathermus*, n. g., for *Odontorrhina globosa*, Schoch, and *D. frater*, n. sp. Congo, KRAATZ, p. 402, Deutsche ent. Zeitschr. 1897.
- Dicerus westwoodi*, Sumbava, SCHOCH, p. 457, Mt. Schweiz. ent. Ges. ix, n. sp.
- Diplognatha viridichalcea*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 192; *D. viridis*, Guinea, KRAATZ, p. 412, Deutsche ent. Zeitschr. 1897 : n. spp.
- Dischisti cincta*, var. n. *soror*, KRAATZ, p. 413, Deutsche ent. Zeitschr. 1897.
- Discopectis holubi*, Zambesi, SCHOCH, p. 51, Mt. Schweiz. ent. Ges. x, n. sp.
- Epistulagma multiimpressa*, Fairm. (= *Pygoropsis albomaculata*, Schoch), KRAATZ, p. 336, Deutsche ent. Zeitschr. 1897.
- Epixanthis maculitarsis*, var. n. *ruficrus*, BRANCSIK, p. 117, Jahresh. Ver. Trencsen. xix.
- Euchræa cælestis*, var. n. *Urania*, FAIRMAIRE, p. 108, Ann. Soc. ent. Belgique, xli.
- E. riphæus*, Madagascar, id. t. c. p. 109, n. sp.
- Euphoria inda*, metamorphoses, SLINGERLAND, p. 50, pl. iii, Canad. Ent. xxix.
- Genuchus dealbatus*, Transvaal, DISTANT, p. 578, Ann. Nat. Hist. xix, n. sp.
- Gnathocera cruda*, var. n. *major*, KOLBE, p. 88, Mt. Mus. Hamburg, xiv.
- G. pilosa*, E. Africa, KRAATZ, p. 408, Deutsche ent. Zeitschr. 1897, n. sp.
- Goliathus giganteus*, variation; var. *atlas*, KRAATZ, pp. 249-252, Deutsche ent. Zeitschr. 1897.
- Grypocnemis*, n. g., near *Cosmiomorpha*, for *G. angolensis*, n. sp. Africa, KRAATZ, p. 151, Deutsche ent. Zeitschr. 1897.
- Heteroclitia* ? *jansoni*, Transvaal, DISTANT, p. 577, Ann. Nat. Hist. xix, n. sp.
- Heterosoma* (= *Eucaetha*, Fairm.), FAIRMAIRE, p. 110, Ann. Soc. ent. Belgique, xli.
- H. sycophanta*, Madagascar, FAIRMAIRE, p. 109, t. c. n. sp.
- Homovalgus*, n. g., for *Valgus seticollis*, Beauv. KOLBE, p. 214, Ent. Zeit. Stettin, lviii.
- Ichnovalgus*, n. g., p. 190, for *I. gracilis*, p. 191, *collinus*, *concentricalis*, p. 192, n. spp. Africa, KOLBE, t. c.
- Lobovalgus*, n. g., for *glabratus*, Kol., KOLBE, p. 207, t. c.

- Macroma insignis*, note, RITSEMA, p. 115, Notes Leyden Mus. xix.
- Macronota gestroi*, Sumatra, *nyassica*, Nias island, KRAATZ, p. 409, Deutsche ent. Zeitschr. 1897, n. spp.
- Mausoleopsis zambesina*, Africa, BRANCSIK, p. 117, pl. iv, fig. 7, Jahresh. Ver. Trencsen. xix, n. sp.
- Mecynonota intermedia*, Celebes, HELLER, p. 24, Abh. Mus. Dresden, vi, No. 10, n. sp.
- Microlomaptera nisbeti*, New Guinea, HELLER, p. 1, Abh. Mus. Dresden, vi, No. 11, n. sp.
- Microthyrea aldabrensis*, Aldabra, p. 701, *providencie*, Providence Island, p. 705, LINELL, P. U. S. Mus. xix, n. spp.
- Molynoptera*, n. g., near *Eucosma*, for *M. multiguttata*, n. sp. Usambara, KRAATZ, p. 335, Deutsche ent. Zeitschr. 1897.
- Myoderma gestroi*, E. Afrika, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 194, n. sp.
- Neoscelis*, n. g., for *Ischnoscelis dohrni*, SCHOCH, p. 453, Mt. Schweiz. ent. Ges. lx.
- Niphetopora maculipes* ♂, KRAATZ, p. 411, Deutsche ent. Zeitschr. 1897.
- Odontorrhina globosa*, Natal, SCHOCH, p. 55, Schweiz. ent. Ges. x, n. sp.
- Odontothyrea*, n. g., near *Tephrea*, for *O. cinnamomea*, n. sp. Zambesi, SCHOCH, p. 50, t. c.
- Edipovalgus*, n. g., p. 208, for *E. nigrescens*, p. 211, *fulvus*, p. 212, n. spp. Cameroons, n. spp. KOLBE, Ent. Zeit. Stettin, lviii.
- Oncosterna friderici*, Celebes, HELLER, p. 23, Abh. Mus. Dresden, vi, No. 10, n. sp.
- Onychotarsus*, n. g., *Ischnostomides* for *O. ater*, n. sp., East Africa, SCHOCH, p. 57, Mt. Schweiz. ent. Ges. x.
- Oxythyrea aldabrensis*, Aldabra Is., p. 700, *abbotti*, p. 703, Glorioso Is., LINELL, P. U. S. Mus. xix, n. sp.
- Pachnodula*, n. g. for *Pachnoda interrupta*, SCHOCH, p. 59, Mt. Schweiz. ent. Ges. x.
- Panglaphyra duboulayi*, var. n., *marginicollis*, KRAATZ, p. 334, Deutsche ent. Zeitschr. 1897.
- Potosia angustata*, var. n., *mulleri*, REITTER, p. 47, Wien. ent. Zeit. xvi.
- P. funebris* (= *C. doriae*, Reiche), BEDEL, p. 35, Abeille, xxix.
- Protetia microbalia*, p. 25, *puncticollis*, p. 26, Celebes, HELLER, Abh. Mus. Dresden, vi, No. 10; *P. heydeni*, Celebes, KRAATZ, p. 406, Deutsche ent. Zeitschr. 1897 : n. spp.
- Pseudoprotetia pilicollis*, E. Africa, KRAATZ, p. 406, t. c. n. sp.
- Pseudopygora*, n. g. for *Pygora erythroderes* (= *ruficollis*, Schoch), KRAATZ, p. 404, Deutsche ent. Zeitschr. 1897.
- Pygora ruficollis*, Madagascar, SCHOCH, p. 56, Mt. Schweiz. ent. Ges. x, n. sp.
- Pygovalgus sequax*, Guinea, KOLBE, p. 203, Ent. Zeit. Stettin, lviii, n. sp.
- Rhabdotis sobrina*, *picta*, variation, KRAATZ, p. 191, Deutsche ent. Zeitschr. 1897.
- Rhomborhina vernicata*, p. 246, *diffusa*, p. 247, *maculicrus*, p. 248, Szécheny, FAIRMAIRE, Notes Leyden Mus. xix, n. spp.
- Stenovalgus bifasciatus*, *quinguedentatus*, Zanzibar, KRAATZ, p. 247, Deutsche ent. Zeitschr. 1897, n. spp.
- Stephanorrhina neumanni*, *adelpha*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 182, n. spp.
- Synistovalgus*, n. g., p. 194, with *S. minutus*, n. sp., Cameroons, p. 196, KOLBE, Ent. Zeit. Stettin, lviii.
- Tmesorhina levis*, *mesosternalis*, Cameroons, KRAATZ, p. 150, Deutsche ent. Zeitschr. 1897, n. spp.
- Trichius lagopus*, Liou-Kiou Is., FAIRMAIRE, p. 166, Bull. Soc. ent. France, 1897, n. sp.

*Trichotarsus*, n. g. for *Ischnoscelis dohrni*, Westw., KRAATZ, p. 157, Deutsche ent. Zeitschr. 1897.

*Trigonophorus riaultii*, China, FAIRMAIRE, p. 245, Notes Leyden Mus. xix, n. sp.

# BUPRESTIDÆ.

[Cf. ABEILLE (1, 4), BLACKBURN (80), BRANCSIK (124), FAIRMAIRE (305, 306), KERREMANS (567, 569, 570), KOLBE (601, 602, 605), REITTER (903, 912), RITSEMA (932), SEMENOW (1003), THÉRY (1073).]

*Acmaeodera pulchra*, variation and synonymy, THÉRY, p. 369, Ann. Soc. ent. France, 1897.

*A. subscalaris*, Afghanistan, REITTER, p. 20, Deutsche ent. Zeitschr. 1897; *A. atomosparsa*, Madagascar, FAIRMAIRE, p. 381, Ann. Soc. ent. Belgique, xli; *A. solitaria*, p. 40, *interrupta*, unica, p. 41, Mexico, *contigua*, Guadeloupe, p. 42, *meridionalis*, Paraguay, p. 43, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.

*Actenodes suavis*, Madagascar, BRANCSIK, p. 119, pl. iv, fig. 8, Jahresh. Ver. Troncsen. xix; *A. viridicollis*, Mexico, p. 20, *parvicollis*, p. 21, *amazonica*, p. 22, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.

*Agrius fissifrons*, Carpathians, p. 9, *acuticornis*, Caucasus, p. 10, *arazicola*, Caucasus, p. 11, *delphinensis*, France, p. 12, *epistomalis*, Moravia, *rudis*, Transcaucasus, p. 13, *reitteri*, Caucasus, p. 16, *sequalis*, Europe, p. 17, *pruinosulus*, France, p. 19, *uhagoni*, Spain, *trochilus*, Djiboutil, p. 20, *croaticus*, Croatia, *juxtasuturalis*, Caucasus, p. 21, *chobauti*, Algeria, *roscidulus*, Morocco, p. 22, *nigrivestis*, France, *nephistopheles*, Europe, p. 23, *panchiorus*, N. Italy, p. 24, *planiceps*, France, *sericarius*, p. 25, *vaginalis*, p. 26, Caucasus, *molitor*, Algeria, p. 28, ABEILLE, Rev. Ent. franc. 1897; *A. barbatus*, Caucasus, p. 34, *cervicornis*, Algeria, p. 35, ABEILLE, t. c.; *A. albifrons*, Herat, REITTER, p. 249, pl. iii, fig. 5, Wien. ent. Zeit. xvi; *A. gounellei*, *bifoveicollis*, p. 55, *gilvopictus*, p. 56, *carus*, p. 57, *canaliculicollis*, *parens*, p. 58, *pictus*, p. 59, *præcipuus*, *postulator*, p. 60, *credulus*, p. 61, *utens*, p. 62, Brazil, *probus*, Venezuela, p. 63, *electus*, *dichrous*, p. 64, *rarus*, p. 65, *unicus*, *oberthuri*, p. 66, *verutus*, p. 67, *prolixus*, p. 68, *pinguis*, *volucer*, p. 69, *votus*, *letabilis*, p. 70, *quietus*, p. 71, *gaudens*, *inflatus*, p. 72, *dives*, p. 73, *puerilis*, p. 74, *celsus*, *aurifrons*, p. 75, *indulgens*, p. 76, *docilis*, *mundus*, p. 77, *suavis*, *sincerus*, p. 78, *badius*, p. 79, *sculpturatus*, *splendens*, p. 80, *deliciosus*, p. 81, *decorus*, Brazil, *humeralis*, Guatemala, p. 82, *dugesii*, Mexico, *subniger*, p. 83, *subviolaceus*, p. 84, Guatemala, *opacus*, Mexico, p. 85, *dilaticornis*, Paraguay, *tubulus*, p. 86, *transitorius*, *dubius*, p. 87, Brazil, *prudens*, Venezuela, p. 88, *consentaneus*, *villosulus*, p. 89, *munificus*, p. 90, *expoliatus*, *lucens*, p. 91, *eximius*, p. 92, *ignavus*, *impudens*, p. 93, *affabilis*, *venustus*, p. 94, *laudabilis*, *turgitus*, p. 95, *urbanus*, p. 96, *timidus*, *æstimatus*, p. 97, *voluptuosus*, *optimus*, p. 98, *sensitivus*, p. 99, *desideratus*, p. 100, *amazonicus*, *strigosus*, p. 101, *vescus*, *fastigatus*, p. 102, *placens*, p. 103, *cardiaspis*, *ignarus*, p. 104, *consularis*, *hesperus*, p. 105, *exiguus*, p. 106, *dirus*, *dicax*, p. 107, *pudens*, *squameus*, p. 108, *impar*, *prælucescens*, p. 109, *tersus*, p. 110, *rimosicollis*, *faber*, p. 111, Brazil, *piliferus*, Buenos Ayres, *intermedius*, p. 112, *baliolus*, p. 113, *expletus*, p. 114, *variatus*, *prælongus*, p. 115, *clausus*, *infuscat*, p. 116, *prismaticus*, *punicus*, p. 117, *vespilio*, p. 118, *dolatus*, *verax*, p. 119, *suspiciosus*, *pertenuis*, p. 120, *cingulatus*, *tenebricosus*, p. 121, *deceptor*, *meracius*, p. 122, *luctuosus*, p. 123, *perangustus*, *cupidus*, p. 124, Brazil, *rusticus*, Chili, p. 125, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.

*Amorphosoma gounellei*, *apicale*, p. 49, *jucundum*, p. 50, *undulatum*, *luteum*, p. 51, *gibbicollis*, *minutum*, p. 52, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.

- Anilara brasiliensis*, Bahia, KERREMANS, p. 15, t. c. n. sp.
- Anthaxia congregata* (= *denticulata*, Roth, = *obockiana*, Fairm.), BEDEL, p. 36, Abeille, xxix.
- A. duo*, Transcaucasus, SEMENOW, p. 599, Horæ Soc. ent. Ross. xxxi:  
*A. angusta*, p. 16, *opima*, *modesta*, p. 17, *agriloides*, *plagiata*, p. 18, *meridionalis*, *ceruginosa*, p. 19, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.
- Aphanisticus actuensis*, n. n. for *siculus*, Mars., ABEILLE, p. 32, Rev. Ent. franc. 1897.
- A. consanguineus*, Java, RITSEMA, p. 125, Notes Leyden Mus. xix, n. sp.
- Brachys nodosus*, *pretiosus*, p. 131, *gounellei*, p. 132, *humeralis*, *lineatus*, p. 133, *fulvus*, *celestis*, p. 134, *cyaneoniger*, *pictus*, p. 135, *purpuratus*, p. 136, *cuprinus*, *nigricans*, p. 137, *zonalis*, p. 138, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
- Buprestis transversepicta*, Amazons, KERREMANS, p. 12, t. c., n. sp.
- Callimicra nigra*, p. 144, *cuprea*, *cyanea*, p. 145, *elongata*, p. 146, Brazil, KERREMANS, t. c., n. spp.
- Chalcogenia theryi*, Egypt, ABEILLE, p. 28, Bull. Soc. ent. France, 1897, n. sp.
- Chrysobothris sericeifrons*, Cayenne, THÉRY, p. 366, Ann. Soc. ent. France, 1897; *C. rutilans*, Goyaz, p. 24, *puncticollis*, Venezuela, p. 25, *dilatocollis*, *amazonica*, p. 26, *porracea*, p. 27, *timida*, p. 28, *lobata*, Brazil, *boliviana*, Bolivia, p. 29, *gounellei*, *auropicta*, Brazil, p. 30, *bogotensis*, Colombia, p. 31, *placida*, *punctata*, p. 32, Brazil, *gentilis*, p. 33, *staudingeri*, Amazons, *punctiventris*, p. 34, *pygmæa*, Brazil, *tenebricosa*, p. 35, *polita*, Amazons, *taciturna*, Buenos Ayres, p. 36, *sexangula*, Cayenne, p. 37, *dugesii*, Mexico, p. 38, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.
- Chrysochroa* : table of specific characters, synonymy, KERREMANS, pp. 145–152, Notes Leyden Mus. xix. *C. suturalis*, variation, p. 367, *mnizechi*, var. n. *viridisplendens*, *caroli*, var. n. *funebria*, p. 368, THÉRY, Ann. Soc. ent. France, 1897.
- C. hasselti*, Bunguran Is., p. 152, *haasi*, Congo, p. 153, KERREMANS, Notes Leyden Mus. xix, n. spp.
- Cisseis rufobasalis*, Madagascar, FAIRMAIRE, p. 380, Ann. Soc. ent. Belgique, xli, n. sp.
- Colobogaster cupricollis*, p. 22, Chiriqui, *biguttata*, p. 23, Goyaz, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
- Coræus ærtzeni* Gangl. (= *carinifer* Ab.), *C. maculifer*, n. n. for *ærtzeni* Ab. ABEILLE, p. 33, Rev. Ent. franc. 1897. *C. marmoratus*, referred to *Cisseoides*, Kerr., THÉRY, p. 369, Ann. Soc. ent. France, 1897.
- C. heydeni*, Syria, ABEILLE, p. 34, Rev. Ent. franc. 1897; *C. pertusicollis*, Guinea, FAIRMAIRE, p. 110, Ann. Soc. ent. France, 1897 : n. spp.
- Cylindromorphus cribratus*, Algeria, p. 30, *opacus*, Wallachia, *acus*, Finland, p. 31, ABEILLE, Rev. Ent. franc. 1897; *C. sinuatus*, Algeria, ABEILLE, p. 36, t. c. : n. spp.
- Dactylozodes fairmairei*, Montevideo, p. 46, *chevrolati*, Buenos Ayres, *oberthuri*, Ecuador, p. 47, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
- Diplolephotus*, n. g., near *Agrilus*, for *D. martini*, n. sp., Djiboutil, and *Agrilus desertus*, Kl., ABEILLE, p. 1, Rev. Ent. franc. 1897.
- Diacoderes saxosicollis*, Madagascar, FAIRMAIRE, p. 381, Ann. Soc. ent. Belgique, xli, n. sp.
- Galbella* Westw. = *Janthe* Mars., ABEILLE, p. 36, Rev. Ent. franc. 1897.
- G. felicissima*, Cyprus, ABEILLE, l. c. n. sp.
- Halecia viridis*, p. 2, *gounellei*, *bahiana*, p. 3, *cuprina*, p. 4, Brazil, *auro-punctata*, Colombia, p. 5, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.

- Hyperantha*: species tabulated, KERREMANS, pp. 44 & 45, t. c.  
*H. judex, oberthuri*, Brazil, p. 45, *pygmæa*, Buenos Ayres, p. 46, *id. t. c. n. spp.*  
*Julodia, cocoons*, PERRAUDIÈRE, p. 113, Bull. Soc. ent. France, 1897.  
*J. atkinsoni*, India, KERREMANS, p. 48, Ind. Mus. Notes, iv, n. sp.  
*Kisanthobia ariasi*, var. n., *algerica*, PIC, p. 41, Misc. ent. v.  
*Leiopleura beltii*, Nicaragua, WATERHOUSE, p. 666, Biol. Centr. Amer. Col. iii, 1; *L. dubia*, Bolivia, p. 141, *rotundata, tristis, cyanura*, p. 142, *pallidicollis, clara*, p. 143, *cæruleicollis*, p. 144, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.  
*Liis striatus*, p. 138, *violaceus, magnus, tristis*, p. 139, *dimidiatus, viridis*, p. 140, *modestus, clarus*, p. 141, Brazil, KERREMANS, t. c. n. spp.  
*Mastogenius ceneus*, Rio, KERREMANS, p. 47, t. c. n. sp.  
*Melanophila oberthuri*, Amazons, p. 13, *bahiana, gounellei*, p. 14, *rubrocincta*, p. 15, Brazil, KERREMANS, t. c. n. spp.  
*Omochyseus pici*, Colombia, THÉRY, p. 365, Ann. Soc. ent. France, 1897, n. sp.  
*Pachyscelus circumdatus*, p. 126, *cæruleipennis, indigaceus*, p. 127, *novus, flexuosus*, p. 128, *proximus*, p. 129, *clarus, cupreus*, p. 130, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.  
*Paradomorphus fohri*, Mexico, WATERHOUSE, p. 664, Biol. Centr. Amer. Col. iii, 1, n. sp.  
*Paragrilus crassus, major*, p. 53, *credulus*, p. 54, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.  
*Paratenia eburneovitii*, Zambesi, BRANCSIK, p. 118, Jahresh. Ver. Trencsen. xix, n. sp.  
*Philoctenus elegans*, Borneo, THÉRY, p. 364, Ann. Soc. ent. France, 1897, n. sp.  
*Pacilonota rutilans*, var. n., *inornata*, THÉRY, p. 367, t. c.  
*Polycesta perlucida*, New Grenada, p. 38, *bicolor*, Brazil, p. 39, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.  
*Psiloptera albicincta* (= *abyssinica* Har.), *P. derosa* (= *marginella* Kerr.), THÉRY, p. 369, Ann. Soc. ent. France, 1897.  
*P. stuhlmanni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 202, pl. ii, fig. 20, ? n. sp.; *P. obliquata*, KOLBE, t. c. p. 350; *P. obliquata*, E. Africa, KOLBE, p. 89, Mt. Mus. Hamburg, xiv; *P. nigerrima*, p. 6, *apiata*, p. 7, *frontalis*, p. 8, *gounellei, bahiana*, p. 9, Brazil, *cincta*, Ecuador, p. 10, *vulnerata, cicatricosa*, Brazil, p. 11, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.  
*Sphenoptera chobauti*, Algeria, ABAILLE, p. 28, Bull. Soc. ent. France, 1897; *S. (Chrysoblemma) cylindracea*, Afghanistan, REITTER, p. 21, Deutsche ent. Zeitschr. 1897 : n. spp.  
*Stenogaster marmoreus*, Bahia, KERREMANS, p. 48, Mem. Soc. ent. Belgique, vi, n. sp.  
*Steraspis kerremansi*, Benguela, THÉRY, p. 364, Ann. Soc. ent. France, 1897, n. sp.  
*Sternocera boucardi*, variation, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 197.  
*S. chrysis*, var. n., *hybrida*, THÉRY, p. 367, Ann. Soc. ent. France, 1897.  
*S. orissa*, var. n., *reimeri*, KOLBE, p. 350, Ent. Nachr. xxi.  
*S. zechiana*, Togo, *id. t. c.* p. 351, n. sp.  
*Stigmoderu insularis*, Tasmania, p. 30, *campestris*, Queensland, *pulchripes*, Victoria, p. 31, BLACKBURN, Tr. R. Soc. S. Austral. xxi, n. spp.  
*Taphrocerus agriliformis*, Goyaz, KERREMANS, p. 125, Mem. Soc. ent. Belgique, vi, n. sp.  
*Tetragonoschema purpurascens*, Pernambuco, KERREMANS, p. 15, t. c. n. sp.  
*Trachys pygmæa*, Fab. (= *corusca* Pouz.), BEDEL, p. 36, Abeille, xxix.  
*T. argenteosparus*, Sierra Leone, THÉRY, p. 367, Ann. Soc. ent. France, 1897; *T. boliviana*, Cochimba, KERREMANS, p. 126, Mem. Soc. ent. Belgique, vi, n. sp.

- Trypantius*, n. n., for *Trypanidius flohri*, Wat., WATERHOUSE, p. 664, Biol. Centr. Amer. Col. iii, 1.  
*Tyndaris fairmairei*, Chili, KERREMANS, p. 39, Mem. Soc. ent. Belgique, vi, n. sp.

## EUCNEMIDÆ.

[*Cf.* CHAMPION (416), FLEUTIAUX (343, 344, 346), KIRSCHBERG (592).]

*Eucnemidæ* of Berlin Museum, FLEUTIAUX (343, 344).

*Anischia crassicornis*, Central America, CHAMPION, p. 668, Biol. Centr. Amer. Col. iii, 1; *A. mexicana*, Motzorongo, FLEUTIAUX, p. 261, Ann. Soc. ent. Belgique, xli : n. spp.

*Arrhipis castanea*, India, FLEUTIAUX, p. 256, Ann. Soc. ent. Belgique, xli; *A. sumatrensis*, Deli, FLEUTIAUX, p. 178, Nov. Zool. iv : n. spp.

*Cephalodendron gigas*, Madagascar, FLEUTIAUX, p. 258, Ann. Soc. ent. Belgique, xli, n. sp.

*Ceratus rothschildi*, New Guinea, FLEUTIAUX, p. 177, Nov. Zool. iv, n. sp.

*Fornax granulatus*, Mexico, CHAMPION, p. 668, Biol. Centr. Amer. Col. iii, 1; *F. flohri*, Mexico, FLEUTIAUX, p. 262, Ann. Soc. ent. Belgique, xli; *F. dircaoides*, Philippines, p. 252, *cervinus*, Colombia, *ebeninus*, Cuba, p. 253, FLEUTIAUX, t. c. : n. spp.

*Galba nigra*, Trobriand islds., FLEUTIAUX, p. 178, Nov. Zool. iv, n. sp.

*Microhagus melasoides*, Brazil, FLEUTIAUX, p. 255, Ann. Soc. ent. Belgique, xli, n. sp.

*Nematodes major*, habitat is Victoria, Australia, not N. America, FLEUTIAUX, p. 257, t. c.

*Phyllocerus ullmanni*, Pola, KIRSCHBERG, p. 677, Verh. Ges. Wien, 1897, n. sp.

*Pseudophyllocerus atricolor*, Reitter, is *Platocerus angulosus*, Germ. SCHWARZ, p. 64, Deutsche ent. Zeitschr. 1897.

*Semnodema ornatum*, Sumatra, FLEUTIAUX, p. 259, Ann. Soc. ent. Belgique, xli, n. sp.

*Soleniscus africanus*, Togo, FLEUTIAUX, p. 260, t. c. n. sp.

*Tharops antennalis*, Sumatra, FLEUTIAUX, p. 250, t. c. n. sp.

*Thylacosternus vittatus*, Nicaragua, CHAMPION, Biol. Centr.-Amer. Col. iii, 1; *T. thiemei*, Colombia, FLEUTIAUX, p. 260, Ann. Soc. ent. Belgique, xli : n. spp.

## ELATERIDÆ.

[*Cf.* BRANCSIK (124), CHAMPION (164), DUBOIS (268), FAIRMAIRE (305), LESNE (677), PIC (860), SCHWARZ (989, 990, 992).]

Notes on larval habits etc. of some N. American, WEED (1178), pp. 31-41. Luminous apparatus of *Pyrophorus*, DUBOIS (268).

*Alaus pectinatus*, Madagascar, FAIRMAIRE, p. 381, Ann. Soc. ent. Belgique, xli, n. sp.

*Anchastus rosti*, Caucasus, SCHWARZ, p. 128, Wien. ent. Zeit. xvi, n. sp.

*Anisomerus*, n. g. for part of *Dicronychus*, SCHWARZ, p. 13, Deutsche ent. Zeitschr. 1897.

*Athous niger*, var. n., *maculicollis*, PIC, p. 5, Echange, 1897.

*A. rosti*, Circassia, p. 131, *koenigi*, Armenia, p. 132, *ganglbaueri*, Nanos, p. 133, *monilicornis*, Bulgaria, p. 134, *brevipennis*, Abchassia, p. 135, SCHWARZ, Wien. ent. Zeit. xvi, n. spp.

*Calostirus purpureus*, var. n., *atropilosus*, BUYSSON, p. 296, Bull. Soc. ent. France, 1897.

*Cardiophorus discicollis*, var. n., *ganglbaueri*, BUYSSON, p. 259, Bull. Soc. ent. France, 1897.

- C. pallidipennis*, Algeria, PIC, p. 2, Miscell. ent. v, n. sp.  
*Corysodactylus*, n. g., *Physodactylini* for *Dicronychus puerulus*, Cand., SCHWARZ, p. 15, Deutsche ent. Zeitschr. 1897.  
*Crepidius flavipes*, St. Vincent, CHAMPION, p. 284, Tr. ent. Soc. London, 1897, n. sp.  
*Cryptohypnus costicollis*, Madagascar, FAIRMAIRE, p. 382, Ann. Soc. ent. Belgique, xli, n. sp.  
*Diacanthus decoratus*, Turkestan, SCHWARZ, p. 136, Wien. ent. Zeit. xvi, n. sp.  
*Dicrepidius insularis*, St. Vincent, CHAMPION, p. 283, Tr. ent. Soc. London, 1897, n. sp.  
*Dicronychidæ*, new family for *Dicronychus*, *Tarsalgus*, and *Anisomerus*, n. g. SCHWARZ, pp. 9-15, Deutsche ent. Zeitschr. 1897.  
*Elatér punctatus* and *ocellatus*, distinguished, BUYSSON, p. 40, Bull. Soc. ent. France, 1897. *E. wentworthensis*, note on, BLACKBURN, p. 32, Tr. R. Soc. S. Austral. xxi.  
*Elatheus niger*, Parnassus, SCHWARZ, p. 130, Wien. ent. Zeit. xvi, n. sp.  
*Esthesopus grenadensis*, W. Indies, CHAMPION, p. 289, Tr. ent. Soc. London, 1897, n. sp.  
*Horistonotus sericeus*, St. Vincent, CHAMPION, p. 288, Tr. ent. Soc. London, 1897, n. sp.  
*Hypnoidus (Zorochnus) delicatulus*, Bagdad, SCHWARZ, p. 129, Wien. ent. Zeit. xvi, n. sp.  
*Idiotropa*, n. g. for *Athous henoni*, Ab., SCHWARZ, p. 63, Deutsche ent. Zeitschr. 1897.  
*Ludius tauricus*, Asia Minor, SCHWARZ, p. 400, t. c. n. sp.  
*Melantho filia*, Madagascar, BRANCHIK, p. 119, pl. iv, fig. 9, Jahresh. Ver. Trencsen. xix, n. sp.  
*Meristhus angulicollis*, Madagascar, FAIRMAIRE, p. 382, Ann. Soc. ent. Belgique, xli, n. sp.  
*Paracardiophorus schusteri*, Bagdad, SCHWARZ, p. 129, Wien. ent. Zeit. xvi, n. sp.  
*Parelater*, n. g., anomalous, for *P. madagascariensis*, n. sp., Madagascar, LESNE, p. 102, cuts, Bull. Soc. ent. France, 1897.  
*Silesis oertzeni*, Crete, SCHWARZ, p. 136, Wien. ent. Zeit. xvi, n. sp.  
*Tursalgus*, referred to *Dicronychidæ*, q. v. supra.

## CEBRIONIDÆ and RHIPICERIDÆ.

- [Cf. CHAMPION (416), CHOBOUT (178), FAIRMAIRE (306), KOLBE (605).]  
*Cebrio bayonnei*, Algeria, CHOBOUT, p. 204, Bull. Soc. ent. France, 1897;  
*C. forcipatus*, Senegal, FAIRMAIRE, Ann. Soc. ent. France, 1897 : n. spp.  
*Chamærrhipis beringei*, Ugogo, KOLBE, p. 352, Ent. Nachr. xxiii, n. sp.  
*Physodactylini*: for n. g. see *Elateridæ*, *Corysodactylus*.  
*Sundulus castanescens*, E. Africa, FAIRMAIRE, p. 111, Ann. Soc. ent. France, 1897; *S. nictoi*, pl. 24, fig. 28, *coniricollis*, fig. 30, Mexico, CHAMPION, p. 585, Biol. Centr.-Amer. Col. iii, 1 : n. spp.  
*Trigonoderus hauseri*, Natal, FAIRMAIRE, p. 111, Ann. Soc. ent. France, 1897, n. sp.

## DASCILLIDÆ.

- [Cf. BLACKBURN (80), CHAMPION (164, 416), FAIRMAIRE (305, 309), KOLBE (601).]  
*Anchytarnus substriatus*, Nicaragua, CHAMPION, p. 593, pl. xxvi, fig. 8, Biol. Centr. Amer. Col. iii, 1, n. sp.



- Artematopus irroratus*, p. 587, pl. xxvi, fig. 1, *obliquus*, p. 588, fig. 4, *scapularis*, fig. 6, *puncticollis*, p. 589, *rufescens*, fig. 2, *costaricensis*, *rotundicollis*, p. 590, *seticornis*, fig. 5, p. 591, Centr. America, CHAMPION, t. c. : n. spp.
- Chaetodactyla*, n. g., near *Ptilodactyla*, p. 660, for *C. lyciformis*, n. sp., Nicaragua, p. 661, pl. xxvii, fig. 27, CHAMPION, t. c.
- Cneoglossa lampyroides*, Mexico, pl. xxvi, fig. 11, *brevis*, Panama, CHAMPION, t. c., n. spp.
- Ctesibius*, n. g., *Artematopinae*, for *C. eumolpoides*, n. sp., Mexico, pl. xxvi, fig. 7, CHAMPION, p. 592, t. c.
- Cyphon bireolatus*, pl. xxvii, fig. 7, p. 618, *quadrioveolatus*, fig. 8, *parallelus*, fig. 9, p. 619, *impressipennis*, fig. 10, *truncatus*, fig. 11, p. 620, *atratus*, p. 621, *guatemalensis*, *ampliceps*, p. 622, Central America, CHAMPION, t. c. ; *C. dehiscens*, p. 293, *caribbeus*, p. 294, St. Vincent, CHAMPION, Tr. ent. Soc. London, 1897 : n. spp.
- Dicranopselaphus pictus*, fig. 12, *flavicornis*, fig. 14, pl. xxvi, Biol. Centr.-Amer. Col. iii, 1.
- D. venosus*, Guatemala, CHAMPION, t. c. pl. xxvi, fig. 13, p. 597, n. sp.
- Ectopria reticulata*, pl. xxvi, fig. 15, *vermiculata*, fig. 17, Panama, CHAMPION, t. c. p. 598, n. spp.
- Eucinetus strigipennis*, Guatemala, CHAMPION, pl. xxvi, fig. 18, p. 599, t. c., n. sp.
- Haploglossa collaris*, figured, pl. xxvii, fig. 12, p. 624, CHAMPION, Biol. Centr.-Amer. Col. iii, 1.
- H. angustata*, Panama, *ferruginea*, Guatemala, *id.* t. c. p. 625, n. spp.
- Helodes hydroporoides*, Madagascar, FAIRMAIRE, p. 382, Ann. Soc. ent. Belgique, xli ; *H. mericana*, Chilpancingo, CHAMPION, pl. xxvi, fig. 19, p. 600, Biol. Centr.-Amer. Col. iii, 1, n. sp.
- Lachnodactyla*, n. g., p. 658, near *Ptilodactyla*, for *L. monticola*, pl. xxvii, fig. 25, *parviscutum*, n. spp., Mexico, p. 659, CHAMPION, t. c.
- Macrohelodes tasmanicus*, Tasmania, BLACKBURN, p. 33, Tr. R. Soc. S. Austral. xxi, n. sp.
- Microdemon*, n. g., with *M. angustatus*, *infuscatus*, p. 213, *flavescens*, *biplagiatus*, p. 214, n. spp., E. Africa, KOLBE, Deutsch-Ost-Africa, iv, Col.
- Ora troberti* (= *chevrolati*, Clk.), figured, pl. xxvi, fig. 24, CHAMPION, Biol. Centr.-Amer. Col. iii, 1.
- O. obliqua*, pl. xxvi, fig. 25, *discoidea*, fig. 26, p. 604, *marmorata*, *mixta*, fig. 27, p. 605, *nigricornis*, p. 606, Centr. America, CHAMPION, t. c., n. spp.
- Paralichas striolatus*, Szé-tchouen, FAIRMAIRE, p. 249, Notes Leyden Mus. xix, n. sp.
- Prionocyphon pilicornis*, pl. xxvi, fig. 20, *auritus*, fig. 22, Centr. America, CHAMPION, p. 601, t. c., n. spp.
- Prionoscirtes*, n. g., near *Scirtes* and *Cyphon*, for *P. saltitans*, n. sp., pl. xxvi, fig. 23, p. 602, and *P. nigripennis*, p. 662, Guatemala, CHAMPION, Biol. Centr.-Amer. Col. iii, 1.
- P. dilaticornis*, St. Vincent, CHAMPION, p. 291, Tr. ent. Soc. London, 1897, n. sp.
- Ptilodactyla sancti-vincentis*, p. 295, *antillarum*, p. 296, St. Vincent, CHAMPION, Tr. ent. Soc. London, 1897 ; *P. rufa*, pl. xxvii, fig. 13, *maculata*, fig. 15, p. 630, *nigricornis*, *ebenina*, p. 631, *glabrata*, *substriata*, pl. xxvii, fig. 16, p. 632, *gibbicollis*, *convexicollis*, p. 633, *reticulata*, *canaliculata*, p. 634, *deplumata*, *fuscicornis*, p. 635, *obovata*, *brevicollis*, fig. 17, *corvina*, fig. 21, p. 636, *marginata*, *chiriquensis*, p. 637, *convexa*, *confinis*, p. 638, *guatemalensis*, *submaculata*, p. 639, *rufotestaceo*, *tabascoana*, p. 640, *gracilis*, *antennalis*, p. 641, *humeroso*, *lutescens*, p. 642, *montana*, fig. 24, *scapularis*, p. 643, *rugulosa*, fig. 18,

- varicornis*, p. 644, *integra*, *punctatissima*, p. 645, *scutata*, *breviscutum*, *dilataticollis*, fig. 19, p. 646, *denticollis*, fig. 20, *sulcata*, p. 647, *pruinosa*, *caudata*, fig. 22, p. 648, *tropicalis*, p. 649, *mexicana*, *opima*, p. 650, *denticulata*, fig. 23, *æquinoctialis*, p. 651, *serrata*, *germana*, p. 652, *subparallela*, *forcipata*, p. 653, *granulicollis*, p. 654, *forticornis*, *pallascens*, *parallela*, p. 655, *deleta*, *marcida*, p. 656, *debilis*, *rotundicollis tenuis*, fig. 26, p. 657, *costaricensis*, p. 658, Central America, CHAMPION, Biol. Centr.-Amer., Col. iii, 1 : n. spp.
- Scirtes fuscicrus*, Madagascar, FAIRMAIRE, p. 383, Ann. Soc. ent. Belgique, xli; *S. insularis*, St. Vincent, CHAMPION, p. 292, Tr. ent. Soc. London, 1897; *S. cæruleus*, pl. xxvi, fig. 29, *rotundatus*, pl. xxvii, fig. 1, p. 609, *circumcinctus*, fig. 2, *thoracicus*, fig. 3, p. 610, *scapularis*, fig. 4, p. 611, *ellipticus*, *pulicarius*, p. 612, *tenuicornis*, *ater*, p. 613, *longicornis*, *collaris*, *suborbiculatus*, fig. 5, p. 614, *salinator*, *quadrinotatus*, fig. 6, p. 615, *longulus*, *angustatus*, pp. 616 & 662, *puncticollis*, *salicis*, *scymnoides*, p. 617, Central America, CHAMPION, Biol. Centr.-Amer., Col. iii, 1 : n. spp.
- Stirophora*, n. g. near *Ptilodactyla* for *S. sulcipennis*, n. sp., Nicaragua, CHAMPION, p. 660, Biol. Centr.-Amer., Col. iii, 1.
- Telon*, n. g. near *Cladotoma*, for *T. cucullatus*, n. sp., Panama, CHAMPION, p. 626, pl. xxvii, fig. 14, t. c.
- Tetruglossa*, n. g., *Anchyrtarsini*, p. 593, for *T. palpalis*, n. sp., Centr. Amer. p. 594, pl. xxvi, fig. 9, CHAMPION, t. c.

## MALACODERMIDÆ.

- [Cf. BLACKBURN (80), BOURGEOIS (117, 118), CHOBOUT (179), DUBOIS (268), FAIRMAIRE (308, 309, 312), FALL (316), GESTRO (402), KOLBE (601, 602), LINELL (686), OLIVIER (799), PIC (843, 851, 856), REITTER (901), SCHILSKY (967, 968).]
- Acanthocnemus asiaticus*, Burma, PIC, p. 79, Bull. Soc. zool. France, 1897, n. sp.
- Antholinus amictus*, metamorphoses, habits, XAMBEU, p. 102, Naturaliste, 1897.
- Aphychtus brevicornis*, Dobrudscha, SCHILSKY, Käf. Eur. xxxiv, 71, n. sp.
- Attalus mozabita*, Algeria, CHOBOUT, p. 278, Bull. Soc. ent. France, 1897; *A. subfasciatus*, S. California islands, FALL, p. 243, Canad. Ent. xxix, n. sp.
- Brachidia*: referred to *Galerucides*, GERMAIN, p. 229, Act. Soc. Chili, vii.
- Cantharis oceanica*, New Hebrides, *laperousei*, Vanikoro, BOURGEOIS, p. 73, Bull. Soc. ent. France, 1897, n. spp.
- Cerallus apicalis*, Turkestan, SCHILSKY, Käf. Eur. xxxiv, 82, n. sp.
- Cladophorus gagates*, *francoisi*, Vanikoro, BOURGEOIS, p. 72, Bull. Soc. ent. France, 1897, n. spp.
- Danacea*: synonymical notes, PIC, pp. 94-97, Miscell. ent. v.
- D. cyprina*, *syriaca*, *acutangula*, *temporalis*, *ochroleuca*, *kruperi*, *conicicollis*, *insularis*, *neglecta*, *baudii*, *vitticollis*, *milleri*, *olympiaca*, *confinis*, *pesruchesi*, *anatolica*, *claripes*, *limbata*, *tripolitana*, *quedenfeldti*, *sericea*, *oertzeni*, *consimilis*, *cylindricollis*, *quadracollis*, *korbi*, *parnassia*, Mediterranean Region, SCHILSKY, Käf. Eur. xxxiii, n. spp.
- Dasytellus impressus*, Gorh. (sub. *Listrus*) (= *D. ovalis*, Cas.), CASEY, p. 682, Ann. N. York Ac. ix.
- Dasytes edoughensis*, Algeria, PIC, p. 219, Bull. Soc. ent. France, 1897; *D. confinis*, Algeria, *staudingeri*, Spain, *lavicollis*, *seriatopunctatus*, Syria; *D. (Mesodasytes) punctulatus*, Algeria, SCHILSKY, Käf. Eur. xxxiii : n. spp.

- Dasytiscus wartmanni*, Algeria, REITTER, p. 219, Wien. ent. Zeit. xvi;  
*D. (Dasytidius) neglectus*, Algeria, SCHILSKY, Käf. Eur. xxxiii, 84;  
*D. turkestanicus*, Turkestan, gestroi, Tunis, SCHILSKY, Käf. Eur. xxxiv,  
 74 & 75 : n. spp.
- Diaphanes raapi*, Batu, OLIVIER, p. 412, Ann. Mus. Genova, xxxviii, n. sp.
- Divales abeillei*, korbi, *aqualis*, *breviusculus*, *brevicollis*, *vierti*, Mediter-  
 ranean region, SCHILSKY, Käf. Eur. xxxiv, n. spp.
- Eros (Pyropterus) rubripes*, Algeria, PIC, p. 220, Bull. Soc. ent. France,  
 1897, n. sp.
- Eulampyris basicrus*, Szé-tchouen, FAIRMAIRE, p. 250, Notes Leyden Mus.  
 xix, n. sp.
- Eurylampyris bivitrea*, Ishigaki-Sima, FAIRMAIRE, p. 69, Bull. Soc. ent.  
 France, 1897, n. sp.
- Haplocnemus rufo-marginatus*, var. n., *edoughensis*, PIC, p. 41, Miscell.  
 ent. v.
- H. uhagani*, *flavicornis*, *cupreatus*, *caucasicus*, *pesruchesi*, *longulus*, *acutan-*  
*gulus*, *venustus*, *diaphanus*, *rugicollis*, *biscraensis*, *aerosus*, *punctiger*,  
*mirabilis*, *dentatus*, Mediterranean region, SCHILSKY, Käf. Eur. xxxiii;  
*H. turcicus*, *breviusculus*, *afer*, *perforatus*, *gracilicornis*, *persicus*, *margi-*  
*nicollis*, *castiliensis*, *cribrosus*, *vierti*, *korbi*, *depressicollis*, *parumpunc-*  
*tatus*, *gestroi*, *melitensis*, Mediterranean Region, SCHILSKY, Käf. Eur.  
 xxxiv : n. spp.
- Ichthyurus zehntneri*, Java, GESTRO, p. 129, Notes Leyden Mus. xix, n. sp.
- Laius cyanoxanthus*, New Hebrides, BOURGEOIS, p. 74, Bull. Soc. ent.  
 France, 1897, n. sp.
- Lamprophorus lutosipennis*, p. 215, Ceylon, *yunnanus*, Yunnan, p. 216,  
 FAIRMAIRE, Notes Leyden Mus. xix; *L. scutatus*, Szé-tchouen, FAIR-  
 MAIRE, p. 250, t. c., n. spp.
- Lampyris noctiluca*, light-organs of young and adult, DUBOIS (268).
- Lampyris mosambica*, E. Africa, KOLBE, p. 90, Mt. Mus. Hamburg, xiv;  
*L. kilimana*, p. 217, *volkensi*, *ugandana*, *piligera*, *fraterna*, *breviuscula*,  
*planitiana*, *costulata*, p. 218, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv,  
 Col. : n. spp.
- Luciola couleyi*, Queensland, BLACKBURN, p. 34, Tr. R. Soc. S. Austral.  
 xxi; *L. abbotti*, Glorioso I., LINELL, p. 703, P. U. S. Mus. xix : n. spp.
- Lycus stuhlmanni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 215,  
 pl. ii, fig. 21, n. sp.
- Malthinus fuscipes*, Algeria, BOURGEOIS, p. 42, Rev. Ent. franc. 1897, n. sp.
- Melyris discoidalis*, Fairm. referred to *Zygia*, BEDEL, p. 36, Abeille, xxix.
- M. ruficolor*, Algeria, CHOBAUT, p. 239, Bull. Soc. ent. France, 1897;  
*M. opaca*, N. Africa, SCHILSKY, Käf. Eur. xxxiv, 100 : n. spp.
- Melyrodes*, Gorb., and *Alymeris*, Cas., are probably synonyms, CASEY, p. 682,  
 Ann. N. York Ac. ix.
- Progeutes longipennis*, var. n., *nigripes*, BOURGEOIS, p. 40, Rev. Ent. franc.  
 1897.
- P. chobauti*, Algeria, *id.* p. 41, t. c., n. sp.
- Psilothrix kurdistanicus*, Kasikoporan, SCHILSKY, Käf. Eur. xxxiv, 25, n. sp.
- Selasia minuta*, E. Africa, KOLBE, p. 91, Mt. Mus. Hamburg, xiv; *S. win-*  
*denmanni*, *kilimana*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.  
 p. 219 : n. spp.
- Telephorus araticollis*, China, FAIRMAIRE, p. 216, Notes Leyden Mus. xix,  
 n. sp.
- Trichocle heydenei*, China, SCHILSKY, p. 155, Deutsche ent. Zeitschr.  
 1897; *T. elongata*, Asia minor, SCHILSKY, Käf. Eur. xxxiii, 85 : n. sp.
- Trichochrous ferrugineus*, Gorb. (sub. *Listrus*) (= *T. exiguus*, Cas.), CASEY,  
 p. 682, Ann. N. York Ac. ix.
- Zygia longicollis*, Turkey, SCHILSKY, Käf. Eur. xxxiv, 88; *Z. viridipennis*,  
 Centr. Africa, *elongata*, Niger, PIC, p. 124, Naturaliste, 1897 : n. spp.

## CLERIDÆ.

[Cf. BLACKBURN (79), CHOBOUT (179), HINTZ (485).]

- Corynetinus fimetarius*, Woll. (= *fulgidicollis*, Desbr.), REITTER, p. 217, Wien. ent. Zeit. xvi. *C. fimetarius* (= *desbrochersi*, Reitt. = *fulgidicollis*, Desb.), PIC, p. 123, Bull. Soc. ent. France, 1897.
- Lissaulicus rufus*, Usambara, HINTZ, p. 287, Deutsche ent. Zeitschr. 1897, n. sp.
- Phlaeocopus bayonnei*, Algeria, CHOBOUT, p. 241, Bull. Soc. ent. France, 1897; *P. kuverti*, Usambara, HINTZ, p. 286, Deutsche ent. Zeitschr. 1897 : n. spp.
- Stigmatium (Astigmus) sericeum*, Usambara, HINTZ, p. 288, Deutsche ent. Zeitschr. 1897; *S. bimaculatum*, W. Australia, BLACKBURN, p. 91, Tr. R. Soc. S. Austral. xxi, n. sp.
- Tillus mozabita*, Algeria, CHOBOUT, p. 240, Bull. Soc. ent. France, 1897, n. sp.

## CUPESIDÆ.

- Cupes cretaceo-tinctus*, E. Africa, p. 353, *capensis*, S. Africa, p. 354, KOLBE, Ent. Nachr. xxiii; *C. oculatus*, Indiana, CASEY, p. 638, Ann. N. York Ac. ix : n. spp.

## PTINIDÆ.

[Cf. ABEILLE (3), KOLBE (601), PIC (841, 842, 861, 862, 863), REITTER (899, 901, 912), ZOUFAL (1202).]

- Bruchoptinus vicinus*, Bosnia, PIC, p. 102, Feuille Natural. xxvii, n. sp.
- Byrrhus (Hadrobregmus) ruber*, Caucasus, REITTER, p. 216, Deutsche ent. Zeitschr. 1897, n. sp.
- Clada costipennis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *C. lineata*, p. 41, *antennata*, p. 42, India, PIC, p. 42, Miscell. ent. v : n. spp.
- Gastrallus striatus*, Syria, *unistriatus*, Greece, ZOUFAL, p. 206, Wien. ent. Zeit. xvi, n. spp.
- Hedobia pubescens*, var. n. *nigrina*, REITTER, p. 21, Deutsche ent. Zeitschr. 1897.
- Lasioderma semirufulum*, Corsica, REITTER, p. 217, Wien. ent. Zeit. xvi, n. sp.
- Pseudomezium*, n. g. for *P. sulcithorax*, n. sp., S. Africa, PIC, p. 102, Feuille Natural. xxvii.
- Pseudoptinus caucasicus*, Caucasus, PIC, p. 102, t. c. n. sp.
- Ptinus pubens*, p. 131, *superbus*, p. 132, France, ABEILLE, Bull. Soc. ent. France, 1897; *P. (Bruchus) andrewesi*, p. 26, *P. (Eutaphrus) brevithorax*, p. 27, India, PIC, Miscell. ent. v; *P. (Gynopterus) pyrenæus*, Pyrenees, *P. (Eutaphrus) tunisensis*, Sfax, PIC, p. 61, t. c.; *P. Bruchoptinus henoni*, Lenkoran, p. 119, *P. (Eutaphrus) rotundipennis*, Syria, p. 120, PIC, Feuille Natural. xxvii : n. spp.
- Xestobium (Hyperisus) subæneus*, Araxes Valley, REITTER, p. 216, Deutsche ent. Zeitschr. 1897, n. sp.
- Xylothea*, n. g., p. 204, *Dorcatomini*, for *X. meieri*, Hamburg (? imported), n. sp., REITTER, p. 205, Wien. ent. Zeit. xvi.

## BOSTRYCHIDÆ.

[Cf. BLACKBURN (79), CHOBOUT (177), LESNE (671—676).]

Monograph of *Bostrychidæ*, pt. ii, *Dinoderinæ*, with description of skeleton and wings, LESNE (671).

- Apate carbonnieri*, Algeria, LESNE, p. 235, Bull. Soc. ent. France, 1897, n. sp.
- Bostrychus normandi*, Algeria, LESNE, p. 236, Bull. Soc. ent. France, 1897;  
*B. khmerensis*, Cochinchina, LESNE, p. 511, Ann. Soc. ent. France, 1896 : n. spp.
- Dinoderus bifoveolatus* (= *perpunctatus*, Lesne), LESNE, p. 147, Bull. Soc. ent. France, 1897.
- D. australiensis*, Port Darwin, LESNE, p. 184, Notes Leyden Mus. xix;  
*D. nitidus*, Marquesas Is., p. 323, *distinctus*, Philippines, p. 325,  
*punctatissimus*, E. India, p. 329, LESNE, t. c. : n. spp.
- Heterarthron subdepressus*, Mexico, LESNE, p. 146, Bull. Soc. ent. France, 1897, n. sp.
- Prostephanus*, n. g., p. 320, and p. 342 for, *truncatus*, Horn, etc., LESNE, Ann. Soc. ent. France, 1897.
- Sinoxylon pygmaeum*, *atratum*, p. 20, *crassum*, *anale*, p. 21, *indicum*, *circuitum*, p. 22, India, LESNE, Ann. Soc. ent. Belgique, xli, n. spp.
- Xylopertha auberti*, Algeria, CHABAUT, p. 170, Bull. Soc. ent. France, 1897;  
*X. ornata*, *parvula*, India, LESNE, p. 19, Ann. Soc. ent. Belgique, 1897; *X. hirticollis*, W. Australia, BLACKBURN, p. 92, Tr. R. Soc. S. Austral. xxi : n. spp.

## TENEBRIONIDÆ.

- [Cf. ALLUAUD (13, 15), BLACKBURN (79, 80), BRANCSIK (124), CHABAUT (178), FAIRMAIRE (305, 306, 308, 309, 312, 313, 314, 315), FALL (316), KOLBE (601, 602), KRAATZ (621, 625), LEA (660), LINELL (689), OERTZEN (798), REITTER (912, 913), VAULOGER (1118, 1119), WASMANN (1165).]
- Adordunea*, subg. n. of *Microdera*, for *M. subseriata*, REITTER, p. 229, Deutsche ent. Zeitschr. 1897.
- Alphitobius grandis*, Madagascar, FAIRMAIRE, p. 113, Ann. Soc. ent. Belgique, xli, n. sp.
- Amarygmus callichromus*, Ishigaki-Sima, FAIRMAIRE, p. 70, Bull. Soc. ent. France, 1897, n. sp.
- Amenophis annulicrus*, W. Africa, FAIRMAIRE, p. 126, Ann. Soc. ent. France, 1897, n. sp.
- Amiantus nitidipennis*, E. Africa, FAIRMAIRE, p. 114, t. c. n. sp.
- Anadischidus*, n. g. for *Nyctobates iphthinoideus*, Quedenf., KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 242.
- Anarmostodera*, n. g. near *Praogena* for *A. crassicornis*, n. sp., Madagascar, FAIRMAIRE, p. 114, Ann. Soc. ent. Belgique, xli.
- Anchophthalmus impressicollis*, E. Africa, FAIRMAIRE, p. 121, Ann. Soc. ent. France, 1897, n. sp.
- Anomalipus*: revision and table of species, OERTZEN, pp. 33–46, Deutsche ent. Zeitschr. 1897.
- Anomalipus ovalipennis*, p. 33, *coriaceus*, p. 34, *seriatus*, *hybridus*, *variabilis*, p. 35, *kolbei*, p. 36, *damaricus*, *carinatus*, p. 37, *acutangulus*, *costatus*, p. 38, *thoracicus*, p. 39, *asidioides*, p. 40, S. Africa, *id. t. c.* : n. spp.
- Arthrodes maindroni*, Kurrachee, *castaneus*, Bukhara, VAULOGER, p. 294, Bull. Soc. ent. France, 1897, n. spp.
- Asbolodes semigranosus*, Perak, FAIRMAIRE, p. 225, Notes Leyden Mus. xix, n. sp.
- Aspidosternum rugulosum*, p. 129, *cariosum*, *tenuecostatum*, p. 130, W. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Axyaon*, n. g., p. 34, *Mericanthides aberrant*, for *A. championi*, n. sp. Queensland, p. 35, BLACKBURN, Tr. R. Soc. S. Austral. xxi.

- Blastarnus*, n. g., near *Micrantereus*, for *B. grallator*, *pruinus*, p. 132, *hirtulus*, p. 133, n. spp., Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897.
- Brachyidium ovatum*, Madagascar, FAIRMAIRE, p. 384, Ann. Soc. ent. Belgique, xli, n. sp.
- Brachypophlæus*, n. g. for *Hypophlæus dimidiatipennis*, Fairm., FAIRMAIRE, p. 113, Ann. Soc. ent. Belgique, xli.
- Bradymerus* (sub. *Eucyrtus*) *carinatus*, Fairm. (= *corinthius*, Fairm.), FAIRMAIRE, p. 218, Notes Leyden Mus. xix.
- B. javanus*, Java, p. 217, *cucullatus*, Bombay, p. 218, FAIRMAIRE, t. c. n. spp.
- Bysacnus martini*, Natal, FAIRMAIRE, p. 124, Ann. Soc. ent. France, 1897, n. sp.
- Camarimena brevicollis*, Java, FAIRMAIRE, p. 226, Notes Leyden Mus. xix, n. sp.
- Catomulus olcesi*, Fairm. (= *subæneus*, Reitt.), REITTER, p. 218, Wien. ent. Zeit. xvi.
- Ceropria viridis*, Africa, KRAATZ, p. 160, Deutsche ent. Zeitschr. 1897, n. sp.
- Clitobius oblongiusculus*, Fairm. (= *Halonomus schneideri*, All.), BEDEL, p. 36, Abeille, xxix.
- Cælus pacificus, remotus*, S. California islands, FALL, p. 241, Canad. Ent. xxix, n. spp.
- Crypticanus*, n. g. near *Trigonopus* for *C. cuneatus*, n. sp. Port Elizabeth, FAIRMAIRE, p. 119, Ann. Soc. ent. France, 1897.
- Cyriogeton pernitidus*, Szé-tchouen, FAIRMAIRE, p. 251, Notes Leyden Mus. xix, n. sp.
- Cyrtotychtus*, n. g. *Eutelinae* for *C. osdaroides*, n. sp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 241.
- Damatris camæna*, Madagascar, FAIRMAIRE, p. 384, Ann. Soc. ent. Belgique, xli, n. sp.
- Derosphærus sanguinicus*, Gaboon, FAIRMAIRE, p. 125, Ann. Soc. ent. France, 1897, n. sp.
- Deroctrophus impressifrons*, Cape Good Hope, FAIRMAIRE, p. 126, t. c. n. sp.
- Dichillus angelicæ*, Armenia, REITTER, p. 217, Deutsche ent. Zeitschr. 1897, n. sp.
- Dichotymus cæruleatus, cupreatus, amplus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 248, n. spp.
- Dysgena gagatina* (= *Derosphærus subopacus*, Fairm.), FAIRMAIRE, p. 126, Ann. Soc. ent. France, 1897.
- D. gigas*, E. Africa, KOLBE, p. 93, Mt. Mus. Hamburg, xiv, n. sp.
- Ebenolus*, n. g., p. 227, near *Pacilesthus* for *E. vernicatus*, n. sp. New Guinea, p. 228, FAIRMAIRE, Notes Leyden Mus. xix.
- Encyalesthus varicolor, iridipennis*, New Guinea, FAIRMAIRE, p. 220, t. c. n. spp.
- Endostomus fuscipictus*, E. Africa, FAIRMAIRE, p. 120, Ann. Soc. ent. France, 1897, n. sp.
- Ergenna*, n. g. near *Lamprobothis* for *E. cærulescens*, n. sp. E. Africa, FAIRMAIRE, p. 139, t. c.
- Erodus antennarius, impressicollis*, Algeria, p. 307, *nanus*, Tunis, p. 308, VAULOGER, Bull. Soc. ent. France, 1897, n. spp.
- Erycaustus*, n. g. near *Hoplonyx*, p. 133, for *E. navicularis*, n. sp. Natal, p. 134, FAIRMAIRE, Ann. Soc. ent. France, 1897.
- Eubalia cyaneostriata*, Madagascar, FAIRMAIRE, p. 113, Ann. Soc. ent. Belgique, xli, n. sp.
- Eucyrtus helleri*, n. n. for *gloriosus*, Fairm. 1896, nec Kr. 1880, FAIRMAIRE, p. 231, Notes Leyden Mus. xix.
- E. viridanus*, Celebes, id. l. c. n. sp.

- Eulytus joveipennis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 248, n. sp.
- Euphlæus bigranosus*, Madura, FAIRMAIRE, p. 221, Notes Leyden Mus. xix, n. sp.
- Euphrynus*, n. g. near *Phrynocolus* for *E. spinithorax*, n. sp. S. Africa, FAIRMAIRE, p. 114, Ann. Soc. ent. France, 1897.
- Eurycaulus henoni*, Egypt, FAIRMAIRE, p. 121, Bull. Soc. ent. France, 1897, n. sp.
- Eurynotus tenuicostatus*, Port Elizabeth, FAIRMAIRE, p. 117, Ann. Soc. ent. France, 1897, n. sp.
- Exangeltus*, n. g. p. 93, *Scaurides* ? for *E. angustus*, n. sp. Centr. Australia, p. 94, BLACKBURN, Tr. R. Soc. S. Austral. xxi.
- Gargilius typhæus*, W. Africa, FAIRMAIRE, p. 123, Ann. Soc. ent. France, 1897, n. sp.
- Gauromaia approximans*, Malasia, FAIRMAIRE, p. 221, Notes Leyden Mus. xix, n. sp.
- Gonocnemis æthiopicus*, Abyssinia, FAIRMAIRE, p. 134, Ann. Soc. ent. France, 1897, n. sp.
- Hadrus cinerascens*, W. (= *verrucatus*, Desb.), *illotus*, W. (= *subellipticus*, Desb.), FAUVEL, p. 38, Rev. Ent. franc. 1897.
- Helæus*, synonymical notes, LEA, pp. 585, 586, P. Linn. Soc. N. S. Wales, 1897.
- H. ellipticus*, W. Australia, LEA, p. 586, t. c. n. sp.
- Helops seminitens*, China, FAIRMAIRE, p. 226, Notes Leyden Mus. xix, n. sp.
- Himatismus saharensis*, Algeria, CHOBOUT, p. 205, Bull. Soc. ent. France, 1897; *H. trochantericus*, Madagascar, FAIRMAIRE, p. 384, Ann. Soc. ent. Belgique, xli : n. spp.
- Hionthis occidentalis*, Tibrant, FAIRMAIRE, p. 180, Bull. Soc. ent. France, 1897, n. sp.
- Hopatum granohispidum*, E. Africa, KOLBE, p. 238, Deutsch-Ost-Afrika, iv, Col. n. sp.
- Hyboproctus*, n. g. *Eutelinae* for *H. nodifer*, *tibialis*, n. spp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 241.
- Hypophlæus longicollis*, *nemosomoides*, Madagascar, FAIRMAIRE, p. 112, Ann. Soc. ent. Belgique, xli : n. spp.
- Ichnodactylus tetradyms*, Zanzibar, FAIRMAIRE, p. 123, Ann. Soc. ent. France, 1897, n. sp.
- Lachnopus*\* *hauseri*, Bukhara, REITTER, p. 217, Deutsche ent. Zeitschr. 1897, n. sp.
- Læna turkestanica*, Margelan, REITTER, p. 221, t. c. n. sp.
- Latheticus oryæ* (= *Lyphia costulata*, Fairm.), BEDEL, p. 36, Abeille, xxix.
- Leptoscapa basalis*, Madagascar, ALLUAUD, p. 152, Bull. Soc. ent. France, 1897, n. sp.
- Machla echinoderma*, S. Africa, FAIRMAIRE, p. 112, Ann. Soc. ent. France, 1897, n. sp.
- Machleida nosibiana*, Madagascar, FAIRMAIRE, p. 110, Ann. Soc. ent. Belgique, xli, n. sp.
- Megacantha rudicollis*, E. Africa, FAIRMAIRE, p. 135, Ann. Soc. ent. France, 1897, n. sp.
- Melanesthes simplex*, *subcoriaceus*, Issyk-Kul, REITTER, p. 220, Deutsche ent. Zeitschr. 1897, n. spp.
- Micrantereus arripes*, *septemcostatus*, E. Africa, FAIRMAIRE, p. 131, Ann. Soc. ent. France, 1897, n. spp.
- Micreuphleus*, n. g., p. 223, near *Sphærocaulus*, for *M. asperipellis*, n. sp. Ceylon, p. 224, FAIRMAIRE, Notes Leyden Mus. xix.

\* This name is in double use in Coleoptera: but we presume the *Heteromerous*, not the *Rhynchophorous*, *Lachnopus* is intended. Recorder.

- Microdera interrupta*, Mongolia, p. 230, *semenowi*, Kashgar, p. 231, *aciculata*, Kirghisia, *strigipleuris*, Persia, p. 232, *minax*, Afghanistan, p. 233, *pulla*, Persia, p. 234, REITTER, Deutsche ent. Zeitschr. 1897: n. spp.
- Myrmecocatops*, n. g., p. 268, *Crypticini* ?, for *M. latus*, n. sp. Madagascar, p. 269, pl. ii, fig. 1, WASMANN, Deutsche ent. Zeitschr. 1897.
- Nyctobates inequalis*, referred to *Encyalesthus*, FAIRMAIRE, p. 218, Notes Leyden Mus. xix.
- N. ? subcruciatus*, Gaboon, FAIRMAIRE, p. 124, Ann. Soc. ent. France, 1897; *N. parallelus*, Szé-tchouen, FAIRMAIRE, p. 251, Notes Leyden Mus. xix : n. spp.
- Opatrum riparium*, characters, GERHARDT, pp. 1-4, Zeitschr. ent. Breslau, xxii.
- O. asperipenne*, Mongolia, REITTER, p. 219, Deutsche ent. Zeitschr. 1897, n. sp.
- Ospidus gibbus*, Queensland, BLACKBURN, p. 94, Tr. R. Soc. S. Austral. xxi, n. sp.
- Osternus nitidipennis*, synonyms rectified, ALLUAUD, p. 150, Bull. Soc. ent. France, 1897.
- Ozenimorphus ? grandicollis*, Togoland, FAIRMAIRE, p. 128, Ann. Soc. ent. France, 1897, n. sp.
- Pachylesthus*, n. g., near *Encyalesthus*, for *P. validus*, Malasia, n. sp. FAIRMAIRE, p. 219, Notes Leyden Mus. xix.
- Paramarygmus metallicus*, E. Africa, FAIRMAIRE, p. 135, Ann. Soc. ent. France, 1897, n. sp.
- Pedinus tibetanus*, Tibet, FAIRMAIRE, p. 217, Notes Leyden Mus. xix, n. sp.
- Peltoides longulus*, Abyssinia, FAIRMAIRE, p. 126, Ann. Soc. ent. France, 1897, n. sp.
- Pentaphyllus angustior*, Madagascar, FAIRMAIRE, p. 112, Ann. Soc. ent. Belgique, xli, n. sp.
- Phaleria cinctipennis*, Madagascar, ALLUAUD, p. 374, Bull. Mus. Paris, 1896, n. sp.
- Phrynocolus ikutanus*, E. Africa, FAIRMAIRE, p. 113, Ann. Soc. ent. France, 1897, n. sp.
- Phylacastus*, n. g., p. 116, near *Micrositus*, for *P. striolatus*, n. sp. Transvaal, FAIRMAIRE, p. 117, t. c.
- Plesia*: a distinct genus, characters, FAIRMAIRE, p. 114, Ann. Soc. ent. Belgique, xli.
- Plesiophthalmus amplipennis*, Szé-tchouen, FAIRMAIRE, p. 252, Notes Leyden Mus. xix, n. sp.
- Praogena rutilia*, p. 137, *quadracollis*, p. 138, E. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Praostetha*, n. g., near *Praogena*, for *P. impressifrons*, n. sp. Congo, FAIRMAIRE, p. 138, t. c.
- Priscoscelis serrata*, larva, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 244, pl. iii, fig. 25.
- P. tridens*, E. Africa, KOLBE, p. 92, Mt. Mus. Hamburg, xiv, n. sp.
- Prolabrus*, n. g., near *Lena* l, for *P. parallelus*, n. sp. Madagascar, FAIRMAIRE, p. 111, Ann. Soc. ent. Belgique, xli.
- Psammodes impressiventris*, E. Africa, FAIRMAIRE, p. 115, Ann. Soc. ent. France, 1897; *P. bennigsenii*, p. 46, *validus*, p. 48, E. Africa, KRAATZ, Deutsche ent. Zeitschr. 1897 : n. spp.
- Pseudadrus*, n. g., for *Hadrus scaphoides*, Mars. FAIRMAIRE, p. 39, Rev. Ent. franc. 1897.
- Pterocoma subnuda*, Mongolia, *chan*, Bukhara, REITTER, p. 218, Deutsche ent. Zeitschr. 1897, n. spp.
- Pterohelarus tenuistriatus*, n. n., for *tristis*, Lea, LEA, p. 586, P. Linn. Soc. N. S. Wales, 1897.



- Pycna impressifrons, minor*, Madagascar, FAIRMAIRE, p. 111, Ann. Soc. ent. Belgique, xli, n. spp.
- Rhytinota cavernosa*, p. 112, *polita*, p. 113, Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Saragus lugubris*, Australia, LEA, p. 587, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Scotinesithes tuberculosus*, Madagascar, FAIRMAIRE, p. 383, Ann. Soc. ent. Belgique, xli, n. sp.
- Selinus asperulus, crenatus*, p. 121, *costulifer, lævistriatus, medius*, p. 122, *plicicollis*, p. 123, Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Sepidium sexcornutum*, E. Africa, FAIRMAIRE, p. 115, t. c. n. sp.
- Stizopus rotundicollis*, Transvaal, FAIRMAIRE, p. 116, Ann. Soc. ent. France, 1897; *S. caraboides*, Transvaal, FAIRMAIRE, p. 119, t. c. : n. spp.
- Strongylium tanganyicum*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 249; *S. oshimanum*, Liou-Kiou Islands, FAIRMAIRE, p. 167, Bull. Soc. ent. France, 1897 : n. spp.
- Suaresius confrater*, Madagascar, BRANCSIK, p. 120, Jahresh. Ver. Trencsen. xix; *S. metallescens*, Madagascar, FAIRMAIRE, p. 385, Ann. Soc. ent. Belgique, xli : n. spp.
- Tanchirus*, n. g., p. 224, near *Sphaerocaulus*, for *T. compactus*, n. sp. Trichinopolis, p. 225, FAIRMAIRE, Notes Leyden Mus. xix.
- Taraxides crenato-striatus*, var. n., *subsulcata*, KOLBE, p. 92, Mt. Mus. Hamburg, xiv.
- T. degener*, E. Africa, FAIRMAIRE, p. 125, Ann. Soc. ent. France, 1897, n. sp.
- Tenebrio giganteus, laticornis*, Africa, FAIRMAIRE, p. 127, Ann. Soc. ent. France, 1897, n. spp.
- Trigonopus ampicollis, brevior*, S. Africa, FAIRMAIRE, p. 118, Ann. Soc. ent. France, 1897, n. spp.
- Typhleusechus*, n. g., new tribe between *Anepsini* and *Nyctoporini*, p. 154, for *T. singularis*, n. sp., California, p. 156, LINELL, Ent. News Philad. 1897.
- Uloma procera*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 239; *U. hondana*, E. Africa, KOLBE, p. 350, t. c.; *U. hondana*, E. Africa, KOLBE, p. 91, Mt. Mus. Hamburg, xiv : n. spp.
- Vieta bulbifera*, E. Africa, FAIRMAIRE, p. 116, Ann. Soc. ent. France, 1897, n. sp.
- Xanthotopia fuscocyaneus*, Port Elizabeth, FAIRMAIRE, t. c., n. sp.
- Zophosis mozabita*, Algeria, FAIRMAIRE, p. 120, Bull. Soc. ent. France, 1897, n. sp.

## CISTELIDÆ.

[Cf. CHAMPION (163), FAIRMAIRE (305, 308, 309), KOLBE (601).]

Catalogue of the *Cistelidæ* published since the issue of the Munich Catalogue, to the end of 1896, CHAMPION, Mem. Soc. ent. Belgique, vi.

- Allecula poplitis*, p. 136, *puberula*, p. 137, W. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Asticostena*, n. g., near *Allecula*, for *A. alternata*, n. sp., Trichinopoly, FAIRMAIRE, p. 228, Notes Leyden Mus. xix.
- Borboresthes*, n. g., near *Allecula*, for *B. fuliginosus*, n. sp., Szé-tchouen, and *A. cruratus*, Mars., FAIRMAIRE, p. 253, Notes Leyden Mus. xix.
- Cistelampra*, n. g. for *C. purpurina*, n. sp., Madagascar, FAIRMAIRE, p. 386, Ann. Soc. ent. Belgique, xli, n. sp.
- Ectenostoma brevicornis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 251, n. sp.

*Heliotaurus*; notes on, PIC, p. 297, Bull. Soc. ent. France, 1897.

*Isomira morosa*, Madagascar, FAIRMAIRE, p. 385, Ann. Soc. ent. Belgique, xli, n. sp.

*Mycetocharina* (= *Caristela*, Fairm.), BEDEL, p. 36, Abeille, xxix.

*Nesiotaureus fuscimembra*, Madagascar, FAIRMAIRE, p. 385, Ann. Soc. ent. Belgique, xli, n. sp.

### PYTHIDÆ.

*Lissodema rosti*, Circassia, REITTER, p. 125, Wien. ent. Zeit. xvi, n. sp.

*Rhinosismus fascipennis*, Talysch, REITTER, p. 125, t. c., n. sp.

*Salpingus dromioides*, Madagascar, FAIRMAIRE, p. 386, Ann. Soc. ent. Belgique, xli, n. sp.

### MELANDRYIDÆ, OTHNIIDÆ.

[Cf. BLACKBURN (79), CASEY (162), REITTER (920).]

*Ababa*, n. g., p. 653, *Othniidæ*, for *O. crinita*, n. sp., Texas, p. 654, CASEY, Ann. N. York Ac. ix.

*Dircæa subtilis*, Galicia, REITTER, p. 246, Deutsche ent. Zeitschr. 1897, n. sp.

*Neogonus hampei*, Ordubad, p. 221, *minos*, Greece, p. 222, REITTER, Deutsche ent. Zeitschr. 1897, n. sp.

*Paromarteon*, n. g., p. 94, aberrant *Melandryid*, for *P. mutabile*, n. sp., Victoria, p. 95, BLACKBURN, Tr. R. Soc. S. Austral. xxi.

*Tetratoma bauduieri* (= *Phlæophilus flavopictus*, Fairm.), BEDEL, p. 36, Abeille, xxix.

### LAGRIIDÆ.

*Casonidea collaris*, E. Africa, FAIRMAIRE, p. 145, Ann. Soc. ent. France, 1897, n. sp.

*Chlorophila basipennis*, Tibet, p. 229, *nitidicollis*, Darjeeling, p. 230, *immarginata*, Tibet, p. 231, FAIRMAIRE, Notes Leyden Mus. xix, n. sp.

*Derostira*, n. g., near *Mesostira*, for *D. crenulipennis*, n. sp., Madagascar, FAIRMAIRE, p. 388, Ann. Soc. ent. Belgique, xli, n. sp.

*Lagria pubens*, p. 140, *scapulata tenella*, *metallina*, p. 141, *semivestita dissimilis*, p. 142, *zonaria*, *nodulosa*, p. 143, Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.

*Nemostira ruficollis*, p. 114, *atrifrons*, p. 115, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *N. morosa*, *geniculata*, *apicicornis*, p. 387, *basiorus*, *ruficollis*, p. 388, Madagascar, FAIRMAIRE, t. c.; *N. cribricollis*, *gracillima*, W. Africa, FAIRMAIRE, p. 144, Ann. Soc. ent. France, 1897: n. spp.

### ANTHICIDÆ, PEDILIDÆ.

[Cf. CHOBOUT (175), FAIRMAIRE (305, 306), LEA (660), PIC (840, 842, 844, 846, 853, 854, 855, 858, 859, 861, 863, 864).]

Supplement to catalogue of *Anthicidæ*, PIC, pp. 212-224 and 343 & 344, Ann. Soc. ent. Belgique, xli.

Notes on Pic's sections of *Anthicus*, CASEY, p. 683, Ann. N. York Ac. ix.

Carnivorous habits, CHOBOUT, pp. 74-78, Bull. Soc. ent. France, 1897, Pic, p. 266, t. c.

*Amblyderus aspericollis*, Madagascar, FAIRMAIRE, p. 116, Ann. Soc. ent. Belgique, xli, n. sp.

- Anthicus*: synonymical notes, PIC, pp. 75-77, Miscell. ent. v. *A. insignis*, characters, var. n., PIC, p. 50, Échange, 1897. *A. formicarius*, and allies, synonymy, HAMILTON, p. 35, Ent. News Philad. 1897.
- A. globipennis*, leuthneri, Syria, PIC, p. 120, Feuille Natural. xxvii; *A. (Aulacoderus) sulcatus*, Corfu, *alitiensis*, Abyssinia, PIC, p. 27, Miscell. ent. v; *A. (Aulacoderus) martini*, S. Africa, PIC, p. 170, Naturaliste, 1897; *A. vagepictus*, *inanis*, *trinotatus*, Madagascar, FAIRMAIRE, p. 117, Ann. Soc. ent. Belgique, xli; *A. antennatus*, Caracas, *A. (Ischyropalpus) albifasciatus*, Australia, PIC, p. 49, Naturaliste, 1897; *A. (Lappus) distinctus*, *A. Mohri*, Mexico, p. 142, *A. (Acanthinus) nitidiceps*, Brazil, p. 156, *A. dilaticeps*, S. Africa, p. 157, PIC, Naturaliste, 1897: n. spp.
- Eurygeniomorphus*, n. g., *Nematoplini*, for *E. rugosus*, n. sp., N. S. Wales, PIC, p. 25, Naturaliste, 1897.
- Eurygenius africanus*, Tanga, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 263, n. sp.
- Formicomus bangi*, var. n., *laticor*, PIC, p. 49, Naturaliste, 1897.
- F. bituberculatus*, Benul, PIC, p. 25, Naturaliste, 1897; *F. corbetti*, Burma, PIC, p. 75, Miscell. ent. v; *F. (Anthelephilus) truncatipennis*, p. 61, *hauseri*, p. 62, Central Asia, PIC, t. c.; *F. tuberculifer*, S. Africa, *bispilifasciatus*, Obock, PIC, p. 134, Naturaliste, 1897; *F. bergrothii*, p. 115, *fortipes*, p. 116, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli: n. spp.
- Leptaleus breviar*, Madagascar, FAIRMAIRE, p. 116, Ann. Soc. ent. Belgique, xli, n. sp.
- Macratris substriata*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 264; *M. hovana*, *anthicoides*, Madagascar, FAIRMAIRE, p. 389, Ann. Soc. ent. Belgique, xli; *M. nigripennis*, Ceylon, *major*, *crassipes*, Borneo, PIC, p. 182, Naturaliste, 1897: n. spp.
- Mecynotarsus laticor*, Algeria, PIC, p. 6, Échange, 1897, n. sp.
- Olotelus reitteri*, Caucasus, PIC, p. 81, Bull. Soc. zool. France, 1897, n. sp.
- Pseudeuglenes*, subg. n., Type *E. 5-tomus*, Th., PIC, p. 81, t. c.
- Scaptia subapicata*, p. 389, *impressicollis*, *pulex*, p. 390, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *S. lunulata*, Queensland, BLACKBURN, p. 95, Tr. R. Soc. S. Austral. xxi: n. spp.
- Tomoderus donckieri*, *crassicornis*, Sumatra, PIC, p. 167, Bull. Soc. zool. France, 1897, n. sp.
- Trotomma brevithorax*, S. Africa, PIC, p. 6, Échange, 1897, n. sp.
- Xylophilidæ*: list of Australian, LEA, p. 589, P. Linn. Soc. N. S. Wales, 1897.
- Xylophilus femoratus*, Port Elizabeth, FAIRMAIRE, p. 140, Ann. Soc. ent. France, 1897; *X. eucalypti*, W. Australia, LEA, p. 589, P. Linn. Soc. N. S. Wales, 1897; *X. maculicollis*, *X. (? Olotelus) pubens*, p. 62, *X. (? Pseudariotus) bifasciatus*, p. 63, Mexico, PIC, Miscell. ent. v: n. spp.

### MORDELLIDÆ and RHIPIPHORIDÆ.

[Cf. CHOBOUT (176), FAIRMAIRE (305, 306), KOLBE (601).]

- Metæcus paradoxus*, notes on habits, CHAPMAN, p. 321, Ent. Record, 1897, and TUCK, p. 59, Ent. Mag. xxxiii.
- Mordella aurocandata*, p. 145, *polysepila*, p. 146, W. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Mordellistena iridescens*, *montana*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 254; *M. suturella*, p. 390, *sinuata*, *canellina*, p. 391, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli: n. spp.
- Pentaria* (sub. *Anaspis*) *gracilis*, Schilsky (= *reitteri*, Chob.), *P. defarguesi* (= *pictipennis*, Reitt. = *oberthuri*, Champ.), CHOBOUT, p. 133, Bull. Soc. ent. France, 1897.
- P. bleusei*, Algeria, CHOBOUT, p. 133, t. c., n. sp.

## CANTHARIDÆ and CEPHALOIDÆ.

[Cf. BALBI (46), CASEY (162), CHOBAUT (177), ESCHERICH (296, 297, 299), FAIRMAIRE (306, 313), JAKOWLEW (543), KOLBE (601), REITTER (912), THOMAS (1081, 1082).]

Characters of the family *Cephaloidæ*, CASEY, p. 649, Ann. N. York Ac. ix. The classification of *Meloidæ* discussed; revision of the palæarctic forms of the subfam. *Zonitides*, ESCHERICH, pp. 96-133, Verh. Ver. Brunn, xxxv.

*Apalus asiaticus*, Turkestan, pp. 119 & 128; *montanus*, Asia Minor, p. 121, A. (*Stenoria*) *tristis*, Ural, pp. 124 & 129, A. (*Sitaris*) *emilæ*, Syra, pp. 125 & 130, ESCHERICH, Verh. Ver. Brunn, xxxv, n. spp.

*Cantharis bifoveiceps*, E. Africa, FAIRMAIRE, p. 147, Ann. Soc. ent. France, 1897, n. sp.

*Cephaloon*: position, palæarctic forms, ESCHERICH, pp. 96-100, Verh. Ver. Brunn, xxxv.

*C. versicolor*, p. 651, *ornatum*, p. 652, N. America, CASEY, Ann. N. York Ac. ix, n. spp.

*Cerpectis vespina*, p. 501, *vellerosa*, *rufimembris*, p. 502, E. Africa, THOMAS, Ann. Nat. Hist. xix, n. spp.

*Ctenopus nudus*, p. 114, *rosenii*, pp. 116 & 128, Transcaspian, ESCHERICH, Verh. Ver. Brunn, xxxv, n. spp.

*Decatomia argentifera* (= *henoni*, Fairm. infra), PIC, p. 150, Bull. Soc. ent. France, 1897.

*D. henoni*, Algeria, FAIRMAIRE, p. 121, Bull. Soc. ent. France, 1897; *D. regis*, Angola, THOMAS, p. 503, Ann. Nat. Hist. xix : n. spp.

*Deridea*: characters and position, THOMAS, p. 389, Ann. Nat. Hist. xix.

*D. notata*, Aden, id. l. c. n. sp.

*Epicaurta arrighii*, Congo, FAIRMAIRE, p. 147, Ann. Soc. ent. France, 1897, n. sp.

*Lydoceras bilineatus*, E. Africa, THOMAS, p. 501, Ann. Nat. Hist. xix, n. sp.

*Lytta mozabita*, Algeria, CHOBAUT, p. 171, Bull. Soc. ent. France, 1897, n. sp.

*Megatrachelus foveicollis*, China, FAIRMAIRE, p. 231, Notes Leyden Mus. xix, n. sp.

*Meloe ruficornis*, Piedmont, BALBI, p. 94, Natural. Sicil. n. s. ii; *M. (Proscarabæus) tarsalis*, p. 249, *bellus*, p. 250, *semenowi*, p. 251, *tenuipes*, p. 252, E. Siberia, JAKOWLEW, Horæ Soc. ent. Ross. xxxi; *M. centripubens*, Mongolia, REITTER, p. 223, Deutsche ent. Zeitschr. 1897; *M. monticola*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 256: n. spp.

*Nemognatha longiceps*, Cazamanca, FAIRMAIRE, p. 146, Ann. Soc. ent. France, 1897, n. sp.

*Oelosimus viridissimus*, var. n. *intermedius*, PIC, p. 42, Miscell. ent. v.

*Synhoria*, n. g. for *Horia* auct., *S. fischeri*, E. Africa, n. sp., KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 256.

*Zonabris fusca*, var. n. *galatiensis*, ESCHERICH, p. 39, Ent. Zeit. Stettin, lviii. *Z. calida*, var. n. *bijuncta*, *paykulli*, var. n. *mozabita*, PIC, p. 2, Miscell. ent. v.

*Z. munda*, Asia Minor, ESCHERICH, p. 38, Ent. Zeit. Stettin, lviii; *Z. wartmanni*, PIC, PIC, p. 124, Rev. Sci. Bourbon. 1897 : n. spp.

*Zonitis microcephalus*, Asia Minor, ESCHERICH, p. 46, Ent. Zeit. Stettin, lviii; *Z. hauseri*, Turkestan, pp. 107 & 127, *Z. (Euxonitis) maculiceps*, Samarkand, p. 110, ESCHERICH, Verh. Ver. Brunn, xxxv : n. spp.

## CEDEMERIDÆ.

*Ananca helvola*, ♂ characters, FAIRMAIRE, p. 118, Ann. Soc. ent. Belgique, xli.

*A. trivittata*, p. 118, *griseus*, p. 119, Madagascar, FAIRMAIRE, t. c. n. spp.

*Asclera sanguinicollis*, var. n. *impressithorax*, PIC, p. 42, Miscell. ent. v.

*A. impressithorax*, note, PIC, p. 128, t. c., also p. 240, Wien. ent. Zeit. xvi.

*Nacerdes transmarina*, Funafuti, RAINBOW, p. 92, Mem. Austral. Mus. iii, n. sp.

*Cedemera barbara*, var. n. *abdominalis*, PIC, p. 42, Miscell. ent. v.

*C. deubeli*, Siebenbürgen, GANGLBAUER, p. 570, Verh. Ges. Wien, 1897, n. sp.

## STREPSIPTERA.

The anterior extremity of the adult female: nervous system of young female, NASSONOW, Zool. Anz. 1897, p. 65.

## CURCULIONIDÆ.

[Cf. BLACKBURN (79, 80), BRANCSIK (124), CASEY (162), DANIEL (230), DESBROCHERS (238, 239), DIETZ (241), ESCHERICH (298), FAIRMAIRE (305, 306, 312), FALL (316), FAUST (317-324), FUENTE (386), GUILLEBEAU (443, 444), HARTMANN (461, 462), HELLER (467, 468, 469), KOLBE (601), LEA (660, 661), LINELL (686, 688), MEYER (746), NÜSSLIN (793), OTTO (812), PIC (861, 862), RAINBOW (892), REITTER (900, 901, 903, 909, 911, 912, 916, 917), SCHULTZE (981-985), STIERLIN (1061), WASMANN (1165).]

*Acalles barbarus* and *teter*, distinctions, p. 208, *brevis*, characters, p. 211, MEYER, Wien. ent. Zeit. xvi.

*A. kabylianus*, Algeria, DESBROCHERS, p. 33, Frelon, vi, n. sp.

*Acalloides saltoides*, Minnesota, DIETZ, p. 416, Tr. Amer. ent. Soc. xxiii, n. sp.

*Acanthoscelis*, n. g., p. 393, for *Caliodes acephalus*, etc., with *A. californicus*, p. 394, pl. xii, fig. 5, *frontalis*, fig. 6, *griseus*, fig. 7, p. 395, *ilex*, p. 396, *tarsalis*, p. 398, *guttatus*, p. 399, *perplexus*, *mendicus*, p. 400, *pusillus*, p. 401, n. spp. N. America, DIETZ, Tr. Amer. ent. Soc. xxiii.

*Acanthotrachelus sharpi*, *griseus*, India, FAUST, p. 384, Deutsche ent. Zeitschr. 1897, n. spp.

*Alaocyba* (= *Übychia*), *A. mingrelica* (= *U. stygia*, Rost), REITTER, p. 77, Wien. ent. Zeit. xvi.

*A. theryi*, Algeria, MEYER, p. 207, Wien. ent. Zeit. xvi, n. sp.

*Alcides clathratus*, Aur. (= *frenatus*, Fst.), FAUST, p. 71, Ent. Zeit. Stettin, lviii.

*A. picturatus*, Madagascar, FAIRMAIRE, p. 174, Ann. Soc. ent. Belgique, xli; *A. semiochraceus*, p. 179, *segnis*, p. 180, *septemmaculatus*, p. 181, *geniculatus*, p. 182, New Guinea, FAUST, Ent. Zeit. Stettin, lviii : n. spp. *Anaballus globulatus*, Madagascar, FAIRMAIRE, p. 172, Ann. Soc. ent. Belgique, xli, n. sp.

*Anthonomus armicus*, Madagascar, FAIRMAIRE, p. 169, Ann. Soc. ent. Belgique, xli; *A. xanthoxyli*, p. 49, *brevirostris*, *testaceo squamosus*, p. 50, N. America, LINELL, J. N. York ent. Soc. v : n. spp.

*Aochetus roseus*, Camaroons, FAUST, p. 75, Ent. Zeit. Stettin, lviii, n. sp.

*Apion lanciferum*, n. n. for *lancirostre*, Chev. p. 9, DESBROCHERS, Frelon, vi.

*A. græcum*, Attica, p. 4, *syriacum*, Syria, p. 6, *parviclava*, Asia Minor, *sculpticollis*, Samarkand, p. 8, *sefrense*, Algeria, *akbesianum*, Syria, p. 10, *longiclava*, Spain, p. 12, *montandoni*, Wallachia, *inapertum*,

- Armenia, p. 13, *fossulatum*, Asia Minor, p. 15, *hartmanni*, Spain, *eppelsheimi*, Bavaria, p. 17, *reyi*, Pyrenees, p. 19, *tereticolle*, Syria, p. 22, *subfarinosum*, p. 23, *mus*, p. 24, Turkestan, *konigi*, p. 25, *coniceps*, Caucasus, *subtrapezicolle*, Syria, p. 27, DESBROCHERS, Frelon, vi; *A. circumscriptum*, p. 82, *tanganum*, p. 83, *mimosæ*, *constrictum*, p. 84, *atricolor*, p. 85, E. Africa, HARTMANN, Deutsche ent. Zeitschr. 1897; *A. symbolum*, Fergusson island, FAUST, p. 178, Ent. Zeit. Stettin, lviii : n. spp.
- Apoderus ferrunequinum*, Madagascar, FAIRMAIRE, p. 186, Ann. Soc. ent. Belgique, xli, n. sp.
- Aromagis saginata*, Australia, LEA, p. 620, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Asemus madagascariensis*, Madagascar, FAUST, p. 388, Deutsche ent. Zeitschr. 1897; *A. inocuus*, *propinquus andrewesi*, p. 350, *cephalotes*, p. 351, *subvittatus*, p. 352, India, FAUST, t. c. : n. spp.
- Astycophilus*, n. g., for part of *Astycus*, FAUST, p. 348, t. c.
- Astycophobus*, n. g., *Tanymecini* for *A. cretaceus*, n. sp., India, FAUST, p. 348, t. c.
- Atelicus variabilis*, Australia, LEA, p. 621, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Athesapeuta famula* Fab. (= *Baridius centrodenudatus* Desb.), FAUST, p. 72, Ent. Zeit. Stettin, lviii.
- Auleutes*, n. g., p. 402, for *Cæliodes epilobii*, etc. and the following n. spp. *curvipes*, p. 403, *ater*, p. 405, *tuberculatus*, *subfasciatus*, p. 406, *tachygonoidea*, *longirostris*, p. 407, N. America, DIETZ, Tr. Amer. ent. Soc. xxiii.
- Bagous madecassus*, Madagascar, FAIRMAIRE, p. 178, Ann. Soc. ent. Belgique, xli, n. sp.
- Balaninus uniformis* and allies, characters, PATTON, p. 76, Ent. News Philad. 1897.
- B. humeralis*, p. 657, *nanulus*, *occidentis*, p. 658, *undulatus*, p. 659, *strictus*, p. 660, *longipes*, *sulcatus*, p. 661, *brevirostris*, p. 662, *monticola*, p. 663, N. America, CASEY, Ann. N. York Ac. ix, n. spp.
- Baridius quadrillum*, Madagascar, FAIRMAIRE, p. 180, Ann. Soc. ent. Belgique, xli, n. sp.
- Baris sculptilis* (= *Athesapeuta scutellaris* Faust), FAUST, p. 72, Ent. Zeit. Stettin, lviii; *B. confinis*, life-history, OSBORN & MALLY, p. 208, P. Iowa Ac. iii.
- B. kaufmanni*, Herculesbad, REITTER, p. 220, Wien. ent. Zeit. xvi; *B. bohemani*, *serbicus*, Servia, SCHULTZE, p. 189, Deutsche ent. Zeitschr. 1897; *B. bohemani*, Bosnia, p. 499, *serbicus*, Servia, p. 500, SCHULTZE, Wiss. Mitt. Bosnien, v; *B. dimidiata*, Ordubad, REITTER, p. 224, Deutsche ent. Zeitschr. 1897; *B. caucasica*, Nucha, SCHULTZE, p. 397, Deutsche ent. Zeitschr. 1897; *B. præambula*, Tekke, p. 89, *syriaca*, Syria, p. 90, FAUST, Wien. ent. Zeit. xvi; *B. helleri*, E. Africa, HARTMANN, p. 95, Deutsche ent. Zeitschr. 1897 : n. spp.
- Barypithes*, in ants' nests, ESCHERICH, p. 21, Ent. Nachr. xxiii.
- Blosyrus ornatus*, India, FAUST, p. 338, Deutsche ent. Zeitschr. 1897, n. sp.
- Brachiodontus*, n. g. for *Amalus*, pt., incl. *B. ganglbaueri*, n. sp., East Karawanka, SCHULTZE, pp. 187 & 188, Deutsche ent. Zeitschr. 1897.
- Brachycerus honorabilis*, Zambesi, BRANCSIK, p. 122, pl. iv, fig. 14, Jahresh. Ver. Trencsen. xix, n. sp.
- Brachyogmus*, n. g., near *Epimechus*, for *B. ornatus*, n. sp., California, LINELL, p. 51, J. N. York ent. Soc. v.
- Brachyxyetus*, n. gen., near *Phyllobius*, for *B. subsignatus*, n. sp., India, FAUST, p. 355, Deutsche ent. Zeitschr. 1897.
- Bradyrinus*, n. g., p. 180, near *Balaninus*, for *B. albosetosulus*, n. sp., Madagascar, p. 181, FAIRMAIRE, Ann. Soc. ent. Belgique, xli.

- Calomycterus obesus*, India, FAUST, p. 382, Deutsche ent. Zeitschr. 1897, n. spp.
- Camptorhinus asperatus*, *inferus*, p. 173, *brevipes*, p. 174, Madagascar, FAUST, Ann. Soc. ent. Belgique, xli; *C. squamoso-hirtus*, Ishigaki-Sima, FAIRMAIRE, p. 70, Bull. Soc. ent. France, 1897 : n. spp.
- Car*, n. g., p. 35, *Erirhinides*?, for *C. condensatus*, n. sp., Australia, p. 36, BLACKBURN, Tr. R. Soc. S. Austral. xxi.
- Catapastus signatipennis*, p. 55, *albonotatus*, p. 56, Florida, LINELL, J. N. York ent. Soc. v, n. spp.
- Cataphractus* (sub *Siteytes*) *glabratus* Pasc. (= *æthiops* Behr.), FAUST, p. 70, Ent. Zeit. Stettin, lviii.
- Catasarcus*: variation and synonymy, LEA, pp. 590–600, P. Linn. Soc. N. S. Wales, 1897.
- Catastygus costulipennis* Fairm., note, FAIRMAIRE, p. 168, Ann. Soc. ent. Belgique, xli.
- Catolethrus distinguendus*, Madagascar, FAIRMAIRE, p. 186, t. c., n. sp.
- Caulomorphus talyschensis*, Lenkoran, REITTER, p. 126, Wien. ent. Zeit. xvi, n. sp.
- Celebia fruhstorferi*, Celebes, FAUST, p. 72, Ent. Zeit. Stettin, lviii; *C. djampeana*, Djampea island, p. 28, *amitiorum*, pp. 29 (and No. 11, p. 7), *rothschildi*, p. 29, *granigera*, p. 30, Celebes, HELLER, Abh. Mus. Dresden, vi, No. 10, n. spp.
- Ceutorhynchini*: revision of N. American with notes on classification, DIETZ, Tr. Amer. ent. Soc. xxiii, pp. 388–480, pls. xii–xiv.
- Ceuthorrhynchidius bedeli*, Algeria, *ambiguus*, Balkans, p. 308, *procerulus*, Altai, p. 310, *longimanus*, Kokan, *brevicornis*, Samara, p. 311, *ovulum*, Caucasus, p. 312, SCHULTZE, Deutsche ent. Zeitschr. 1897, n. spp.
- Ceuthorrhynchus kraatzi*, var. n., *bosnicus*, SCHULTZE, p. 501, Wiss. Mitt. Bosnien, v.
- C. sequens*, Croatia, STIERLIN, p. 479, Mt. Schweiz. ent. Ges. ix; *C. curvistriatus*, Bosnia, p. 496, *apfelbecki*, p. 497, *cinnamomeus*, Roumelia, *puerulus*, Bosnia, p. 498, SCHULTZE, Wiss. Mitt. Bosnien, v; *C. speiseri*, Hungary, p. 313, *curvistriatus*, Bosnia, p. 315, *lederi*, Armenia, p. 316, *cognatus*, Caucasus, p. 317, *apfelbecki*, Burgas, p. 318, *cinnamomeus*, Slivno, p. 319, *puerulus*, Bosnia, p. 320, *præclarus*, Roumelia, p. 321, *transsylvanicus*, Siebenburgen, p. 322, *sareptanus*, Sarepta, p. 324, SCHULTZE, Deutsche ent. Zeitschr. 1897; *C. affluentus*, p. 421, *seriesetosus*, *isolatus*, p. 422, *consanguineus*, *disturbatus*, p. 423, *ovipennis*, p. 428, *aeratus*, p. 431, *bolteri*, p. 432, *hirticollis*, *armatus*, p. 433, *pollinosus*, p. 434, *hornii*, *nodipennis*, p. 435, *adjunctus*, p. 436, *mutabilis*, p. 437, *ovalis*, *intermedius*, p. 438, *numulus*, p. 439, *hamiltoni*, p. 440, *adpersulus*, p. 441, *pauzillus*, p. 442, *anthonomoides*, p. 444, *oregonensis*, p. 445, *siculus*, p. 446, *persimilis*, p. 447, *albopilosulus*, p. 448, *erythropus*, p. 450, *morosus*, *atriculus*, p. 451, N. America, DIETZ, Tr. Amer. ent. Soc. xxiii : n. spp.
- Cherodrys tonsus*, Akbès, DESBROCHERS, pp. 5 & 9, Frelon, vi; *C. viridis*, Marocco, STIERLIN, p. 477, Mt. Schweiz. ent. Ges. ix : n. spp.
- Chalcocybeus inermis*, New Guinea, HELLER, p. 3, Abh. Mus. Dresden, vi, No. 11, n. sp.
- Cidnorrhinus fausti*, E. Africa, HARTMANN, p. 94, Deutsche ent. Zeitschr. 1897, n. sp.
- Chlorophanus*, revision, characters, synonymy, FAUST, pp. 77–95, Ent. Zeit. Stettin, lviii.
- C. dorsiger*, Strassburg, p. 87, *schonherri*, E. Siberia, p. 91, *auripes*, China, p. 94, id. t. c. n. spp.
- Cionus subaquamorus*, Caucasus, REITTER, p. 127, Wien. ent. Zeit. xvi; *C. leucostictus*, p. 178, *catenatus*, p. 179, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli : n. spp.

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- Tychius albocruciatu*s, Caucasus, REITTER, p. 126, Wien. ent. Zeit. xvi; *T. elongatulus*, p. 22, *mathieui*, *flavicornis*, p. 23, N. Africa, *latiusculus*, Asia Minor, p. 24, *imbricatus*, *suturatus*, Cairo, p. 25, *sericatus*, Algeria, p. 26, DESBROCHERS, Frelon, vi; *T. sulcatulus*, *inermis*, p. 664, *transversus*, p. 665, N. America, CASEY, Ann. N. York Ac. ix : n. spp.
- Xenotychius*, n. g., p. 251, for *X. strigicollis*, n. sp. Syria, p. 252, pl. iii, fig. 8, REITTER, Wien. ent. Zeit. xvi.
- Xylinophorus peregrinus*, p. 346, *srigifrons* (sic), India, FAUST, p. 347, Deutsche ent. Zeitschr. 1897, n. spp.
- Zantes limbatus*, Pasc. redescribed, FAIRMAIRE, p. 165, Ann. Soc. ent. Belgique, xli.
- Zurus maculithorax*, Brazil, HELLER, p. 199, Tijdschr. Ent. xl, n. sp.
- Zygobaris celestina*, Florida, LINELL, p. 55, J. N. York Ent. Soc. v, n. sp.
- Zygomicros*, n. g., for *Copturus minutus*, Lec. CASEY, p. 679, Ann. N. York Ac. ix.
- Zygopini*: tables of N. American, CASEY, pp. 666–678, t. c.

## SCOLYTIDÆ.

[Cf. BLANDFORD (416), CHOBOUT (174), ESCHERICH (302), FAIRMAIRE (305), HUBBARD, (516, 517), MENEGAUX & COCHON (738), REITTER (918), SCHAUFUSS (961, 962), VEEN (1120, 1122).]

Table for determining injurious German *Scolytidæ*, ESCHERICH (302).

Classification of *Tomicides*, BLANDFORD, pp. 183 & 184, Biol. Centr.-Amer. Col. iv, 6.

The food-habits of N. American *Tomicides*, HUBBARD, Bull. Dep. Agric. Ent. vii, pp. 9–30.

*Chramesus tumidulus*, Guatemala, BLANDFORD, p. 170, pl. vi, fig. 20, Biol. Centr.-Amer. Col. iv, 6, n. sp.

*Crossotarsus maculatus*, Sierra Leone, SCHAUFUSS, p. 104, Berlin. ent. Zeitschr. 1897, n. sp.

*Dendroctonus micans*, habits, MENEGAUX & COCHON (738); *D. frontalis*, habits, SCHWARZ, p. 81, P. ent. Soc. Washington, iv.

- D. adjunctus*, Guatemala, BLANDFORD, p. 147, Biol. Centr.-Amer. Col. iv, 6, n. sp.
- Dendrosinus transversalis*, Mexico, pl. vi, fig. 16, *globosus*, Venezuela, *vittifrons*, Brazil, *puncticollis*, Colombia, BLANDFORD, p. 156, t. c., n. spp.
- Diamerus cinerascens*, Madagascar, FAIRMAIRE, p. 195, Ann. Soc. ent. Belgique, xli; *D. ericius*, Natal, SCHAUFUSS, p. 217, Tijdschr. Ent. xl : n. spp.
- Epomadius*, n. g., *Hexacolides*, for *E. culcitatus*, n. sp. Panama, pl. vii, fig. 4, BLANDFORD, p. 179, Biol. Centr.-Amer. Col. iv, 6.
- Eulytocerus*, n. g., near *Dryotomus*, for *E. championi*, n. sp. Panama, pl. vi, fig. 19, p. 161, BLANDFORD, t. c.
- Hexacolides*, new group connecting *Tomicides* with *Hylesinides*, BLANDFORD, p. 173, Biol. Centr.-Amer. Col. iv, 6.
- Hexacolus setosus, melanocephalus*, pl. vii, fig. 5, p. 181, *unipunctatus*, p. 182, *piceus*, p. 183, Central America, BLANDFORD, t. c., n. spp.
- Hylastes incomptus*, Mexico, *variegatus*, Panama, BLANDFORD, p. 145, t. c., n. spp.
- Hylosciyllus*, n. g., pp. 218, 220, for *H. exsculptus, loricatus*, p. 218, *radens*, p. 219, n. spp. Madagascar, SCHAUFUSS, Tijdschr. Ent. xl.
- Ips (Tomicus) curvidens* and allies, characters, REITTER, p. 243, Wien. ent. Zeit. xvi.
- Microborus*, n. g., *Hexacolides*, for *M. boops*, n. sp. Guatemala, pl. vii, fig. 1, p. 175, BLANDFORD, t. c.
- Mitosoma planum, excisum, accuratum*, Madagascar, SCHAUFUSS, p. 224, Tijdschr. Ent. xl, n. spp.
- Phleoborus*: characters, BLANDFORD, p. 149, sexual distinctions, p. 152, Biol. Centr.-Amer. Col. iv, 6.
- P. belti*, p. 151, *rugatus*, pl. vi, fig. 14, Nicaragua, *radulosus*, Ecuador, p. 153, BLANDFORD, t. c., n. spp.
- Phlebotribus discrepans, nubilus*, p. 163, *scabratus*, p. 164, *demessus*, p. 165, *asperatus, armatus*, p. 166, *subovatus*, p. 167, *sodalis*, p. 168, *biguttatus*, p. 169, Central America, BLANDFORD, t. c., n. spp.
- Phlebotoma*, n. g., near *Polygraphus*, for *P. rude*, n. sp. Panama, pl. vi, fig. 12, BLANDFORD, t. c., p. 148.
- Platypus compositus*, larva, food-habits, HUBBARD, p. 14, Bull. Dep. Agric. Ent. 7.
- P. hintzi*, E. Africa, p. 103, *auricomans, aterrimus*, p. 107, *dispar*, p. 108, W. Africa, SCHAUFUSS, Berlin. ent. Zeitschr. 1897; *P. nobilis*, p. 221, *diegenis*, p. 222, Madagascar, SCHAUFUSS, Tijdschr. Ent. xl : n. spp.
- Pacilips*, n. g., near *Hexacolus*, for *P. sannio*, n. sp., W. Africa, SCHAUFUSS, p. 110, Berlin. ent. Zeitschr. 1897.
- Prionosceles*, n. g., p. 177, *Hexacolides*, for *P. atratus*, pl. vii, fig. 3, *maurus*, n. spp., Guatemala, p. 178, BLANDFORD, Biol. Centr.-Amer. Col. iv, 6.
- Problechilus consocius*, p. 171, *minor*, p. 172, Guatemala, BLANDFORD, t. c., n. spp.
- Pycnarthrum*; characters, BLANDFORD, pp. 175 & 176, Biol. Centr.-Amer. Col. iv, 6; *P. transversum*, Guatemala, *id. t. c.*, p. 177, n. sp.
- Sphærotrypes tanguanus*, p. 101, Africa, *blandfordi*, Burma, p. 102, SCHAUFUSS, Berlin. ent. Zeitschr. 1897, n. spp.
- Stephanoderes alutaceus*, Africa, SCHAUFUSS, p. 102, Berlin. ent. Zeitschr. 1897; *S. vulgaris*, Seychelles, SCHAUFUSS, p. 209, Tijdschr. Ent. xl : n. spp.
- Thamnurgus declivis*, Centr. Eur., *armeniacus*, Ordubad, REITTER, p. 244, Deutsche ent. Zeitschr. 1897, n. spp.
- Tomicus cinchonæ*, Java, VEEN, p. 18, Bull. Kol. Mus., HAARLEM, Juni, 1897; *T. cinchonæ*, Java, VEEN, p. 135, Notes Leyden Mus. xix : n. spp.

- Xyleborus morigerus*, metamorphoses, CHABAUT, pp. 261–264, Ann. Soc. ent. France, 1897.
- X. splendidus*, p. 111, *aurilegulus*, p. 112, Amazons, SCHAUFUSS, Berlin. ent. Zeitschr. 1897; *P. altivaudi*, Madagascar, p. 210, *bucco*, Seychelles, p. 212, *capito*, Philippines, p. 215, SCHAUFUSS, Tijdschr. Ent. xl : n. spp.
- Xylechinus irrasus*, pl. vi, figg. 17, 18, p. 157, *scabiosus*, *fuliginosus*, p. 158, *tesellatus*, *marmoratus*, p. 159, Central America, BLANDFORD, t. c., n. spp.
- Xylocleptes ambitiosus*, Gaboon, SCHAUFUSS, p. 109, Berlin. ent. Zeitschr. 1897, n. sp.

## BRENTHIDÆ.

[Cf. FAIRMAIRE (305), KOLBE (601), SENNA (1004, 1005).]

- Acratus armatus*, Colombia, SENNA, p. 234, Ann. Soc. ent. Belgique, xli, n. sp.
- Arrhenodes vampyrus*, S. America, SENNA, p. 230, t. c., n. sp.
- Bolbocranius*, n. g. (?), with *B. mandibularis*, p. 284, *cribriceps*, p. 285, E. Africa, n. spp., KOLBE, Deutsch-Ost-Afrika, Col. iv.
- Brenthus festivus*, Chiriqui and Colombia, p. 232, *maculipennis*, Ecuador, p. 233, SENNA, Ann. Soc. ent. Belgique, xli, n. spp.
- Cerobates rectestriatus*, Madagascar, FAIRMAIRE, p. 195, Ann. Soc. ent. Belgique, xli, n. sp.
- Cyphagogus bipunctatus*, N. S. Wales, SENNA, p. 227, Ann. Soc. ent. Belgique, xli, n. sp.
- Estenorrhinus formosus*, p. 231, 4-fasciatus, p. 232, Colombia, SENNA, t. c., n. spp.
- Eupsalis brevirostris*, *taruensis*, *callosoguttis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. n. spp.
- Heteroplites celebicus*, Celebes, SENNA, p. 242, Ann. Soc. ent. Belgique, xli, n. sp.
- Ithystenus hebridarum*, New Hebrides, SENNA, p. 235, t. c., n. sp.
- Miolispa novoguineensis*, var. n., *antennata*, SENNA, p. 229, Ann. Soc. ent. Belgique, xli; *M. australiana*, Victoria, *id.*, p. 228, t. c.; *M. tuberculatipennis*, p. 237, *intermedia*, p. 239, Celebes, SENNA, Ann. Soc. ent. Belgique, xli : n. spp.
- Paryphobrenthus*, n. g., near *Ceocephalus*, for *P. beringei*, n. sp., E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, col. p. 287.
- Prodictor laminatus*, ♀ (= *Achrionota setigera* Sen.), SENNA, p. 237, Ann. Soc. ent. Belgique, xli.
- P. fruhstorferi*, Celebes, SENNA, p. 241, t. c. n. sp.
- Schizotrachelus metallicus*, Celebes, SENNA, p. 240, Ann. Soc. ent. Belgique, xli, n. sp.
- Spatherinus gabonicus* (= *juvenilis*, Kolbe), p. 229, *S. eupsaloides* ♂, p. 230, SENNA, Ann. Soc. ent. Belgique, xli.
- S. stuhlmanni*, E. Africa, pl. iii, fig. 37, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 286, ? n. sp.
- Stereodermus raapi*, Batu, SENNA, p. 543, Ann. Mus. Genova, xxxviii, n. sp.
- Storcosomus sansibaricus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 287, n. sp.
- Zemtosus striolatus*, Madagascar, FAIRMAIRE, p. 187, Ann. Soc. ent. Belgique, xli, n. sp.

## ANTHRIBIDÆ.

[Cf. FAIRMAIRE (305), JORDAN (557, 558), KOLBE (601), REITTER (919).]

- Acorynus transiens*, p. 627, *clathratus*, p. 628, *fenestratus*, p. 629, *sulcicollis*, p. 630, Sumatra, *mentawensis*, Mentawai island, *enganensis*, Engano, *trivittatus*, p. 631, *discicollis*, p. 632, Mentawai, *obliquus*, p. 633, Sumatra, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Amecus*, n. g., near *Platyrrhinus*, for *A. viridans*, n. sp., Madagascar, FAIRMAIRE, p. 190, Ann. Soc. ent. Belgique, xli.
- Aneurrrhinus fasciatus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 290, n. sp.
- Apatenia scelestus*, *angulicollis*, subsp. n., JORDAN, p. 177, Nov. Zool. iv.
- A. batjanensis*, Batchian, JORDAN, p. 176, t. c., n. sp.
- Apolecta enganensis*, Engano, p. 640, *guttifera*, Sumatra, p. 641, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Arachnocaulus*, n. g., near *Caranistes*, for *A. filitarsis*, n. sp., Madagascar, FAIRMAIRE, p. 189, Ann. Soc. ent. Belgique, xli.
- Aræocerus fasciculatus*, metamorphoses, CHITTENDEN, p. 36, Bull. Dep. Agric. Ent. viii.
- Basidiassus*, n. g., near *Platyrrhinus*, for *B. cristatus*, n. sp., Madagascar, FAIRMAIRE, p. 192, Ann. Soc. ent. Belgique, xli.
- Basitropis tuberculatus*, Madagascar, FAIRMAIRE, p. 192, t. c.; *B. brevis*, Engano, JORDAN, p. 642, Ann. Mus. Genova, xxxviii : n. spp.
- Brachytarsus alternatus*, life-history, QUAINANCE, pp. 1-3, pl. i, Ent. News Philad. 1897.
- Caranistes tenuiclavus*, Nossi-Bé, FAIRMAIRE, p. 193, Ann. Soc. ent. Belgique, xli, n. sp.
- Dendrotropus hypocrita*, subsp. n. *enganensis*, JORDAN, p. 642, Ann. Mus. Genova, xxxviii.
- Diastatropis rugatulus*, *tessellatus*, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.
- Gymnognathus germaini*, Bolivia, p. 173, *duquanus*, Colombia, p. 174, *vitticollis*, Bolivia, *femorulis*, Colombia, p. 175, JORDAN, Nov. Zool. iv, n. spp.
- Hypselotropis rosenbergi*, Colombia, JORDAN, p. 173, Nov. Zool. iv, n. sp.
- Hypseus frenatus*, Sumatra, JORDAN, p. 637, Ann. Mus. Genova, xxxviii, n. sp.
- Ischnocerus tuberosus*, Nossi-Bé, FAIRMAIRE, p. 189, Ann. Soc. ent. Belgique, xli, n. sp.
- Litocerus plagifer*, p. 634, *crassus*, Sumatra, *mentawensis*, Mentawai, p. 635, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Mecocerus assimilis*, subsp. n., *sumatranus*, JORDAN, p. 624, t. c.
- M. tuberifer*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 288, n. sp.
- Phrynoidius*, n. g., between *Brachytarsus* and *Aræocerus* for *P. raffrayi*, n. sp., Madagascar, FAIRMAIRE, p. 194, Ann. Soc. ent. Belgique, xli.
- Physopterus sumatranus*, p. 624, *biplagiatus*, p. 625, Sumatra, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Sintor affinis*, Sumatra, *lineatus*, Engano, JORDAN, p. 626, t. c. n. spp.
- Straboscopus armatus*, Colombia, JORDAN, p. 176, Nov. Zool. iv, n. sp.
- Tophoderes longirostris*, Madagascar, FAIRMAIRE, p. 187, Ann. Soc. ent. Belgique, xli, n. sp.
- Tropideres coquerellii*, *tessellatus*, referred to *Basitropis*, FAIRMAIRE, p. 192, Ann. Soc. ent. Belgique, xli.
- T. exul*, p. 190, *amænus*, *minor*, *griseus*, p. 191, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *T. enganensis*, Engano, JORDAN, p. 636, Ann. Mus. Genova, xxxviii : n. spp.
- Urodon albescens*, Bukhara, *albosuturatus*, Araxes Valley, *densatus*, Amasia, p. 245, *fulvipes*, Transcaspien, p. 246, REITTER, Deutsche ent. Zeitschr. 1897, n. spp.
- Xenocerus enganensis*, Engano, p. 638, *ornatus*, p. 639, *scutellaris*, p. 640, Sumatra, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.



## BRUCHIDÆ.

*Spermophagus robiniae*, habits, BRITTON, p. 173, Ent. News Philad. 1897.

## CERAMBYCIDÆ.

[*Cf.* AURIVILLIUS (39), BELON (64, 65), BLACKBURN (79, 80), BRANCSIK (124), ESCHERICH (299), FAIRMAIRE (306, 308, 309, 311, 312), GAHAN (390), HELLER (467, 468), HEYDEN (477), JAKOWLEW (542, 544), JORDAN (1028), KOLBE (601, 602), LINELL (686), PIC (847, 851, 857, 865), REITTER (904, 912, 915), RITSEMA (930, 934), SEMENOW (1003), SHARP (1007), THÉRY (1075), XAMBEU (1198).]

Notes and generalities on the larvæ of Longicorns, XAMBEU (1198).

*Cerambycidae* of Canada, WICKHAM, pp. 81, etc., Canad. Ent. xxix.

*Acanthophorus beringei*, *nyansanus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 352, n. spp.

*Acmaeops daghestanica*, Caucasus, PIC, p. 262, Natural. 1897, n. sp.

*Egosoma ossea*, Borneo, AURIVILLIUS, p. 242, Ent. Tidskr. 1897, n. sp.

*Afrocomis*, n. g., near *Litopus*, for *A. bennigseni*, n. sp., E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 352.

*Agnia pubescens*, Palawan, AURIVILLIUS, p. 247, pl. iii, fig. 3, Ent. Tidskr. 1897, n. sp.

*Alphitopola sulphurea*, Gaboon, AURIVILLIUS, p. 248, pl. iii, fig. 3, t. c., n. sp.

*Anatragus*, n. g., *Sternotomini*, for *A. ornatus*, n. sp., Ugogo, KOLBE, Deutsch-Ost-Afrika, Col. iv, p. 312.

*Ancylistes lacteopictes*, *gibbicollis*, *impunctatus*, p. 398, *zebrinus*, *pictidorsis*, p. 399, *picticornus*, *pacificus*, p. 400, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.

*Anisogaster nigrostrigatus*, p. 393, *transversus*, *longulus*, p. 394, Madagascar, FAIRMAIRE, t. c., n. spp.

*Anthophilax attenuatus*, oviposition, YOUNGS, p. 192, Ent. News Philad. 1897.

*Aphelogaster*, n. g., for *Haplogaster*, K., KOLBE, p. 299, *A. emini*, fig., pl. iv, fig. 42, Deutsch-Ost-Afrika, Col. iv.

*Apomecyna fauveli*, Seychelles, THÉRY, p. 66, Bull. Soc. ent. France, 1897; cf. ALLUAUD, t. c. p. 151; n. sp.

*Aromia coreana*, Séoul, FAIRMAIRE, p. 232, Notes Leyden Mus. xix, n. sp.

*Arrhenotus pauli*, Celebes, HELLER, p. 35, Abh. Mus. Dresden, vi, No. 10, n. sp.

*Astathes kukenthali*, *humeralis*, Borneo, HEYDEN, p. 578, Abh. Senckenb. Ges. xxiii, n. spp.

*Auxa parvidens*, p. 396, *lineolata*, *scriptidorsis*, p. 397, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.

*Batocera timorlautensis*, Timor Laut, HELLER, p. 6, Abh. Mus. Dresden, vi, No. 11, n. sp.

*Belodera amæna*, Natal, FAIRMAIRE, p. 153, Ann. Soc. ent. France, 1897, n. sp.

*Cantharocnemus modestus*, E. Africa, FAIRMAIRE, p. 150, Ann. Soc. ent. France, 1897, n. sp.

*Cantharoctenus fischeri*, minor, *gravidus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 293, n. spp.

*Chariesthes narmorata*, Madagascar, FAIRMAIRE, p. 403, Ann. Soc. ent. Belgique, xli, n. sp.

*Chlidones albostrigatus*, *insignicollis*, Madagascar, FAIRMAIRE, p. 396, t. c., n. spp.

- Chreonoma weisi*, Celebes, HEYDEN, p. 577, Abh. Senckenb. Ges. xxiii, n. sp.
- Clytus (Xylotrechus) deyrollei*, Trebizond, PIC, p. 219, Bull. Soc. ent. France, 1897, n. sp.
- Cædomæa* (= *Tigranesthes* Fairm.), FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli.
- C. rufina*, longula, Madagascar, FAIRMAIRE, p. 196, t. c., n. spp.
- Coptops infirmus*, Madagascar, FAIRMAIRE, p. 195, t. c., n. sp.
- Cortodera flavimana*, varr. n., GANGLBAUER, p. 52, Ent. Zeit. Stettin, lviii.
- Cubilia*, n. g., *Niphoniina*, p. 453, for *C. smithi*, n. sp., E. Africa, p. 454, JORDAN (1028).
- Cyrtoneps? nigropunctatus*, Tranquebar, AURIVILLIUS, p. 243, pl. iii, fig. 6, Ent. Tidskr. 1897, n. sp.
- Demagogus donaldsoni*, E. Africa, JORDAN (1028), p. 452, n. sp.
- Derolophodes*, n. gen. near *Saphanus*, for *D. tuberosus*, n. sp., Nossi-Bé, pl. iv, fig. 18, BRANCSIK, p. 125, Jahresh. Ver. Trencsen. xix.
- Diadelia rufostrigosa*, Madagascar, FAIRMAIRE, p. 402, Ann. Soc. ent. Belgique, xli, n. sp.
- Dichostates tabularis*, E. Africa, KOLBE, p. 97, pl. fig. 9, Mt. Mus. Hamburg, xiv; *D. tabularis*, Bagainoyo, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 317 : n. spp.
- D. eugenius*, New Guinea, HELLER, p. 5, Abh. Mus. Dresden, vi, No. 11; *D.* (sub *Monohammus*) *rarus* (= *eugenius* Hell.), HELLER, p. 194, Notes Leyden Mus. xix : n. sp.
- Dorcudion (Compsodorcadion)*, revision, JAKOWLEW, pp. 675-681, Horæ Soc. ent. Ross. xxxi.
- D.* (*C.*) *ganglbaueri*, p. 677, *arietinum*, p. 678, Turkestan, JAKOWLEW, t. c.; *D. koenigi*, Caucasus, JAKOWLEW, p. 245, t. c.; *D.* (*Compsodorcadion*) *politipenne*, Altai, PIC, Miscell. ent. v, p. 94; *D. nigrosuturatum*, Armenia, REITTER, p. 236, Deutsche ent. Zeitschr. 1897; *D. escherichi*, p. 54, *egregium*, p. 56, *angorensis*, p. 57, Asia Minor, GANGLBAUER, Ent. Zeit. Stettin, lviii : n. spp.
- Enoplocerus armillatus*, pupa, GOELDI, Bol. Mus. Para. ii, p. 64, pls.
- Epepeotes gigas*, Borneo, AURIVILLIUS, p. 246, pl. iii, fig. 1, Ent. Tidskr. 1897, n. sp.
- Eugraphus longehamatus*, Madagascar, FAIRMAIRE, p. 394, Ann. Soc. ent. Belgique, xli, n. sp.
- Eumimetes sparsuticollis*, Madagascar, FAIRMAIRE, p. 401, t. c., n. sp.
- Euryptera*: notes on and table of species, BELON, p. 339, Ann. Soc. ent. Belgique, xli.
- E. argodi*, Bolivia, BELON, p. 342, t. c., n. sp.
- Formicominus*, n.g., near *Pseudocephalus*, for *F. mirabilis*, n. sp., N. S. Wales, AURIVILLIUS, p. 244, Ent. Tidskr. 1897.
- Freia flavoscapulata*, Zanzibar, FAIRMAIRE, p. 154, Ann. Soc. ent. France, 1897, n. sp.
- Galactesthes*, n. g., near *Prosopocera*, for *G. nivosus*, n. sp., Africa, FAIRMAIRE, p. 152, t. c.
- Gaurotinus*, n. g., near *Gaurotus*, for *G. tenuelineatus*, n. sp., Madagascar, FAIRMAIRE, p. 392, Ann. Soc. ent. Belgique, xli.
- Glenea*: structure of claws, sexual dimorphism, numerous synonymy, GAHAN, pp. 473-493, Ann. Nat. Hist. xix.
- Glenea salinensis*, Tenasserim, *aluensis*, Solomon islands, p. 478, *subsimilis*, India, p. 479, *propinqua*, Singapore, p. 480, *siamensis*, Siam, *albofasciata*, Java, p. 481, *wallacei*, Sarawak, p. 482, *lineata*, Oshima, p. 483, *assimilis*, p. 484, *gratiosa*, p. 485, Sylhet, *griseoguttata*, Macassar, p. 485, *papuensis*, New Guinea, p. 486, *celestina*, Java, p. 487, *suturalis*, Penang, *chlorospila*, Oshima, p. 488, *signatifrons*,

- p. 489, Java, GAHAN, Ann. Nat. Hist. xix; *G. keili*, Sumatra, RITSEMA, p. 133, Notes Leyden Mus. xix; *G. centroguttata*, Tibet, FAIRMAIRE, p. 232, Notes Leyden Mus. xix: n. spp.
- Goephanes virgulifer, bipartitus*, Madagascar, FAIRMAIRE, p. 401, Ann. Soc. ent. Belgique, xli, n. spp.
- Hebestola annulipes*, Bolivia, BELON, p. 186, Bull. Soc. ent. France, 1897, n. sp.
- Heteroglenea*, n. g., for *Glenea nigromaculata* and *glechoma*, GAHAN, p. 490, Ann. Nat. Hist. xix.
- Hypatium semiopacum*, Somaliland, FAIRMAIRE, p. 151, Ann. Soc. ent. France, 1897, n. sp.
- Hypocrites discors*, E. Africa, FAIRMAIRE, p. 150, Ann. Soc. ent. France, 1897, n. sp.
- Hypsostilbus*, n. g., Cerambycides, near *Tetropium*, for *H. griseus*, n. sp., Nossi-Bé, pl. iv, fig. 19, BRANCSIK, p. 126, Jahresh. Ver. Trencsen. xix.
- Hystatus bouchardi*, Sumatra, FAIRMAIRE, p. 38, Bull. Soc. ent. France, 1897, n. sp.
- Ischnoberea*, n. g.?, *Amphionychides* or *Tetraopsides*, for *I. elongata*, n. sp., Nossi-Bé, pl. iv, fig. 21, BRANCSIK, p. 128, Jahresh. Ver. Trencsen. xix.
- Jonthophana*, n. g., near *Nemophas*, for *J. annulicornis*, n. sp., New Guinea, HELLER, p. 4, Abh. Mus. Dresden, vi, No. 11.
- Lasiocercis albicollis*, Madagascar, FAIRMAIRE, p. 400, Ann. Soc. ent. Belgique, xli, n. sp.
- Leptocera aldabrensis*, Aldabra island, LINELL, p. 701, P. U. S. Mus. xix, n. sp.
- Leucographus alluaudi*, Madagascar, FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli, n. sp.
- Lophoptera fischert, minor*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 308, n. spp.
- Mallosia brevipes*, Persia, PIC, p. 188, Bull. Soc. zool. France, 1897, n. sp.
- Marmaroglypha fasciata*, Borneo, AURIVILLIUS, p. 248, pl. iii, fig. 2, Ent. Tidokr. 1897, n. sp.
- Mecothyrea*, n. g., for *Mecosaspis*, Th., KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 300.
- Nastocerus*, n. g., near *Neomarius*, for *N. maculicornis*, n. sp., Madagascar, FAIRMAIRE, p. 391, Ann. Soc. ent. Belgique, xli.
- Nenenia thoracica*, p. 37, *virgata*, p. 38, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxi, n. spp.
- Neodorcadion*, table of Central Asian species, REITTER, pp. 177-184, Ent. Nachr. xxiii.
- N. oreadis*, p. 179, *egregium*, p. 180, *miraculum*, p. 182, Centr. Asia, *id. t. c.* n. spp.
- Nicarete impressipennis*, Madagascar, FAIRMAIRE, p. 402, Ann. Soc. ent. Belgique, xli, n. sp.
- Næmia* (= *Nithinus*, Fairm.), FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli.
- Oberea incompleta*, Szé-tchouen, FAIRMAIRE, p. 255, Notes Leyden Mus. xix; *O. baramensis, fumata*, Borneo, HEYDEN, p. 579, Abh. Senckenb. Ges. xxiii: n. spp.
- Ædeus concolor*, Madagascar, FAIRMAIRE, p. 392, Ann. Soc. ent. Belgique, xli, n. sp.
- Oncideres*, habits of, Brazilian, SCHMALZ, p. 10, Soc. ent. xii.
- Orthoschema violaceipenne*, p. 244, *superbum*, p. 245, pl. iii, fig. 4, Brazil, AURIVILLIUS, Ent. Tidokr. 1897, n. spp.
- Pachyosa*, n. g., near *Mesosa*, for *P. cervinopicta*, n. sp., Ishigaki-Sima, FAIRMAIRE, p. 71, Bull. Soc. ent. France, 1897.

- Pachystola griseotincta*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 316, n. sp.
- Parozodes*, n. g., near *Ozodes*, for *P. erythrocephalus*, n. sp., Bahia, AURIVILLIUS, Ent. Tidskr. 1897.
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- Penthea mastersi*, N. W. Australia, BLACKBURN, p. 97, Tr. R. Soc. S. Austral. xxi, n. sp.
- Philagathes bipartitus*, E. Africa, JORDAN (1028), p. 452, n. sp.
- Phyllocnema pedatrix*, *nigricollis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 302, n. spp.
- Phytæcia bangi*, Asia Minor, PIC, p. 189, Bull. Soc. zool. France, 1897, n. sp.
- Plagithmysus*, habits, stridulation, p. 375, variation, p. 376, PERKINS, P. Cambridge Soc. ix.
- P. albertsi*, Honolulu, SHARP, p. 12, Ent. Mag. xxxiii, n. sp.
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- Prionus laminicornis*, Szé-tchouen, FAIRMAIRE, p. 254, Notes Leyden Mus. xix, n. sp.
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- Rhagium (Allorrhagium) schtschukini*, Caucasus, SEMENOW, p. 601, Horæ Soc. ent. Ross. xxxi, n. sp.
- Rhamnusium*, var. n., BEDEL, pp. 43, 44, Abeille, xxix.
- Rhaphidopsis nigroscripita*, East Africa, FAIRMAIRE, p. 155, Ann. Soc. ent. France, 1897; *R. guttata*, E. Africa, JORDAN (1028), p. 453 : n. spp.
- Rhytidodera integrifrons*, Celebes, HELLER, p. 36, Abh. Mus. Dresden, vi, No. 10, n. sp.
- Rhytiphora spenceri*, Centr. Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxi, n. sp.
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- Strangalia 4-fasciata*, var. n. *notatipennis*, PIC, p. 5, Echange, 1897.
- Synelasma baramensis*, Borneo, HEYDEN, p. 578, Abh. Senckenb. Ges. xxiii, n. sp.
- Teinotus*, n. g., near *Hesperophanes*, for *T. cinereus*, n. sp. Madagascar, pl. iv, fig. 20, BRANCSIK, p. 127, Jahresh. Ver. Trencsen. xix.
- Tetartanus*, n. g., near *Tritomicrus*, for *T. cribricollis*, n. sp. Madagascar, FAIRMAIRE, p. 393, Ann. Soc. ent. Belgique, xli.
- Tetrops hauseri*, Thian-Schan, REITTER, p. 225, Deutsche ent. Zeitschr. 1897, n. sp.
- Tithoes falcatus*, *gularis*, p. 350, *gnatho*, *sulcicornis*, *reichardi*, *longicornis*, p. 351, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. n. spp.
- Tritomicrus dorsopictus*, Natal, FAIRMAIRE, p. 153, Ann. Soc. ent. France, 1897, n. sp.
- Xanthopiodus*, n. g., near *Logisticus*, for *X. angulicollis*, n. sp. Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, p. 395.
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## CHRYSOMELIDÆ.

- [Cf. ABEILLE (2), BLACKBURN (79), BRANCSIK (124), CHITTENDEN (172), ESCHERICH (299), FAIRMAIRE (305), FALL (316), GANGLBAUER (1205), GERMAIN (397), GESTRO (398-401, 403, 404), GUILLEBEAU (444,

445), HEYDEN (477), JACOBSON (530, 531), JACOBY (533-538), KOLBE (601, 602, 605), LINELL (687), PIC (845, 848), REITTER (912), VERHOEFF (1126), WEISE (1179, 1182, 1183).]

Pp. 161-180 of BEDEL, Faune Col. Seine, v: published in 1897 in connection with Ann. Soc. ent. France, 1896, concludes *Galerucini* and commences *Halticini*.

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*Anisodera rusticana*, Burma, WEISE, p. 119, Deutsche ent. Zeitschr. 1897;

*A. obscura*, Sumatra, GESTRO, p. 67, Notes Leyden Mus. xix; *A. tuberosa*, p. 50, *testacea*, p. 52, *humilis*, p. 53, *candezei*, p. 54, Sumatra, GESTRO, Ann. Mus. Genova, xxxviii : n. spp.

*Aphthona grenadensis*, St. Vincent, JACOBY, p. 267, Tr. ent. Soc. London, 1897, n. sp.

*Aspidispa horvathi*, New Guinea, GESTRO, p. 451, Termes. Fuzetek, xx, n. sp.

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*A. rotunda*, Madagascar, FAIRMAIRE, p. 203, Ann. Soc. ent. Belgique, xli;

*A. usambica*, pl. iv, fig. 53, *tetraspilota*, fig. 52, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 343 : n. spp.

*Aulacophora tenuicincta*, Batu, JACOBY, p. 406, Ann. Mus. Genova, xxxviii, n. sp.

*Aulamorphus*, n. g., near *Galeruca*, for *A. hollisi*, n. sp., Usambara, pl. xxxiv, fig. 12, JACOBY, p. 572, P. Zool. Soc. London, 1897.

*Batusia*, n. g., near *Ochralea*, for *B. raapi*, n. sp., Batu, JACOBY, p. 409, Ann. Mus. Genova, xxxviii.

*Blepharida insignis*, Nossi-Bé, BRANCSIK, p. 130, pl. iv, fig. 22, Jahresh. Ver. Trencsen. xix; *B. laesa*, E. Africa, KOLBE, p. 99, pl. fig. 10, Mt. Mus. Hamburg, xiv; *B. picta*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 336 : n. spp.

*Botryonopa helleri*, Borneo, HEYDEN, p. 579, Abh. Senckenb. Ges. xxiii; *B. nitidicollis*, p. 44, *crassicornis*, p. 45, *nobilis*, p. 46, *toba*, p. 47, Sumatra, GESTRO, Ann. Mus. Genova, xxxviii : n. spp.

*Brachidia*, Sol., referred to *Galerucides*; its vesicles, GERMAIN, pp. 229-237, Act. Soc. Chili, vii.

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*Callispa bottegi*, E. Africa, GESTRO, p. 713, Ann. Mus. Genova, xxxviii;

*C. quadricollis*, p. 113, *loxia*, p. 114, *scutellaris*, p. 115, India, *curta*, Perak, p. 116, WEISE, Deutsche ent. Zeitschr. 1897; *C. splendidula*, Borneo, GESTRO, p. 116, Ann. Mus. Genova, xxxviii; *C. fulva*, Mentawai isld., GESTRO, p. 41, t. c. : n. spp.

*Caloepla andreweesi*, p. 97, *nigriventris*, India, *obscura*, Burma, p. 98, WEISE, Deutsche ent. Zeitschr. 1897, n. spp.

*Candezea nigratarsis*, *nigrocerulea*, *duvivieri*, p. 573, *variopennis*, p. 574, pl. xxxiv, figg. 9 & 10, Madagascar, JACOBY, P. Zool. Soc. London, 1897.

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*C. andreweesi*, p. 111, *spissa*, *belli*, p. 112, India, WEISE, Deutsche ent. Zeitschr. 1897, n. spp.

*Ceratipsa biroii*, New Guinea, GESTRO, p. 451, Termes. Fuzetek, xx, n. sp.

*Chatocnema semicerulea* (= *Plectroscelis meridionalis*, All.); *C. obesa*, Boield. (= *P. meridionalis*, Foudr.), BEDEL, p. 36, Abeille, xxix.

*C. gahani*, Mashonaland, p. 560, *antennata*, *subquadrata*, p. 561, *semiregulata*, p. 562, *mashona*, p. 563, JACOBY, P. Zool. Soc. London, 1897; *C. nana*, Grenada, JACOBY, p. 269, Tr. ent. Soc. London, 1897 : n. spp.

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- Chalcophana impressipennis*, p. 169, *boliviana*, p. 170, *elongata*, p. 193, *viridi-basalis*, p. 194, Bolivia, *punctatissima*, Ecuador, *abdominalis*, p. 195, *fulvocincta*, p. 216, *oberthuri*, Bolivia, *longicornis*, Amazons, p. 217; *C. duodecimpunctata*, Peru, p. 218, JACOBY, Entomologist, 1897, n. spp.
- Chalcoplacis gigas*, Cayenne, JACOBY, p. 168, t. c., n. sp.
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- Chlamys natalensis*, Estcourt, JACOBY, p. 264, P. Zool. Soc. London, 1897; *C. arizonensis*, S. Arizona, LINELL, p. 479, P. U. S. Mus. xix : n. spp.
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- Cælanomenodera clathrata*, p. 341, *costulata*, p. 342, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *C. distinguenda*, *crassicornis*, *luctuosa*, p. 404, *abnormis*, *chermesina*, *luridicollis*, *bicavata*, p. 405, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli : n. spp.
- Cænobius flavitarsis*, Mashonaland, JACOBY, p. 264, P. Zool. Soc. London, 1897, n. sp.
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- Colasposoma kraatzi*, p. 547, *foveatum*, p. 548, *transvalense*, p. 549, Africa, JACOBY, P. Zool. Soc. London, 1897, n. spp.
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- Coscinoptera intermedia*, St. Vincent, JACOBY, p. 253, Tr. ent. Soc. London, 1897, n. sp.
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- conjungens, testaceo-rufus*, p. 201, *suturanigra, nigrosparsus, perelegans*, p. 202, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *C. mandarensis*, India, JACOBY, p. 421, Ann. Soc. ent. Belgique, xli; *C. pubicollis*, Arizona, LINELL, p. 480, P. U. S. Mus. xix : n. spp.
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- Dactylispa*, n. g., p. 137, for *D. andrewesi*, India, p. 129, *mendica*, Burma, p. 131, *corpulenta*, India, p. 132, *srnka*, Burma, p. 133, *soror*, p. 134, *præfica, filiola*, p. 135, India, *pauli*, E. Africa, p. 137, n. spp., WEISE, Deutsche ent. Zeitschr. 1897.
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- Dia stolaca decorata*, Sumatra, GESTRO, p. 70, Notes Leyden Mus. xix, n. sp.
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- Dichirispa*, subg. n. of *Hispa*, for African *Platypria*, GESTRO, p. 111, Ann. Mus. Genova, xxxviii.
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- Euryope bipartita*, p. 549, pl. xxxiv, fig. 1, *nigricollis*, fig. 2, p. 550, Africa, JACOBY, t. c., n. spp.
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- Hispopria dohrni*, Sumatra, GESTRO, p. 49, Ann. Mus. Genova, xxxviii, n. sp.
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- Hypolampsis annulicornis*, St. Vincent, JACOBY, p. 274, Tr. ent. Soc. London, 1897, n. sp.
- Ivongius minutus*, p. 536, *leferrei*, p. 537, *abbreviatus*, p. 545, Madagascar, JACOBY, P. Zool. Soc. London, 1897, n. spp.
- Labidostomus attenuata*, Syria, PIC, p. 202, Bull. Soc. zool. France, 1897; *L. escherichi*, Asia Minor, WEISE, p. 63, Ent. Zeit. Stettin, lviii : n. spp.
- Lachnæi marshalli*, Natal, JACOBY, p. 251, pl. xvii, fig. 4, P. Zool. Soc. London, 1897, n. sp.
- Lachnispæ*, subg. n., cf. *Gonophora*.
- Lactica lævicollis*, St. Vincent, JACOBY, p. 259, Tr. ent. Soc. London, 1897, n. sp.
- Lefereæ*, n. g., *Eumolpinæ*, for *L. æneicollæ*, p. 527, pl. xxxiv, fig. 3, *puncti-collis*, *fulvipes*, p. 528, *abdominalis*, *intermedia*, p. 529, Mashonaland, *minuta*, Niger, p. 530, n. spp., JACOBY, P. Zool. Soc. London, 1897.
- Lema biapina*, Madagascar, FAIRMAIRE, p. 198, Ann. Soc. ent. France, xli; *L. princeps*, p. 238, *marshalli*, pl. xvii, fig. 2, *brevicornis*, p. 239,



- fuscitarsis*, p. 240, *semipurpurea*, *tarsata*, fig. 1, p. 241, *consobrina*, p. 242, Africa, JACOBY, P. Zool. Soc. London, 1897; *L. cardoni*, p. 420, *mandarensis*, p. 421, India, JACOBY, Ann. Soc. ent. Belgique, xli; *L. longipennis*, *jacobina*, *lebioides*, p. 474, *coloradensis*, p. 475, N. America, LINELL, P. U. S. Mus. xix; *L. sharpi*, Grenada, JACOBY, p. 250, Tr. ent. Soc. London, 1897: n. spp.
- Lina scripta*, habits, WEBSTER, p. 202, J. N. York Ent. Soc. v.
- Liniscus mashonanus*, Mashonaland, JACOBY, p. 534, P. Zool. Soc. London, 1897, n. sp.
- Longitarsus wollastoni*, Madagascar, *africanus*, p. 555, *biangulatus*, p. 556, Mashonaland, Madagascar, JACOBY, P. Zool. Soc. London, 1897; *L. horni*, St. Vincent, JACOBY, p. 268, Tr. ent. Soc. London, 1897: n. spp.
- Lophistomus*, n. g., near *Cryptocephalus*, for *L. tricolor*, n. sp., E. Africa, WEISE, p. 396, Deutsche ent. Zeitschr. 1897.
- Luperus (Calomicrus) kanigi*, Russian Turkestan, JACOBSON, p. 216, Annuaire Mus. St. Petersb. 1897; *L. giganteus*, p. 564, *weisei*, *inconspicuus*, p. 565, *verticalis*, Africa, *madagascariensis*, Madag. p. 566, *nigrosuturalis*, pl. xxxiv, fig. 11, p. 567, *brevicornis*, *mashonanus*, *scutellatus*, p. 568, Africa, JACOBY, P. Zool. Soc. London, 1897: n. spp.
- Lygaria mutabilis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 334, n. sp.
- Lythraria*, n. g. for *Ochrosis salicariae*, BEDEL, p. 168, Faune Col. Seine, v.
- Macrocoma mosumbica*, E. Africa, KOLBE, p. 98, Mt. Mus. Hamburg, xiv, n. sp.
- Malacosoma theryi*, Algeria, GUILLEBEAU, p. 166, Bull. Soc. ent. France, 1897; *M. donkieri*, *capitatum*, p. 569, *pallidum*, *dalmanni*, p. 570, Africa, JACOBY, P. Zool. Soc. London, 1897: n. spp.
- Malaxia marshalli*, Mashonaland, JACOBY, p. 571, t. c., n. sp.
- Malegia*: *Amauronia contracta*, Fairm. belongs here, BEDEL, p. 36, Abeille, xxix.
- Megascelis texana*, Brownsville, LINELL, p. 473, P. U. S. Mus. xix, n. sp.
- Megistops granulatus*, Grenada, JACOBY, p. 275, Tr. ent. Soc. London, 1897, n. sp.
- Melissa*, n. g., near *Callispa*, p. 115, for *M. andreweesi*, n. sp., India, p. 116, WEISE, Deutsche ent. Zeitschr. 1897.
- Menius fulvicornis*, Ashantee, *madagascariensis*, p. 541, *unicolor*, p. 542, Madagascar, JACOBY, P. Zool. Soc. London, 1897, n. spp.
- Metachroma viticola*, Texas, LINELL, p. 481, P. U. S. Mus. xix, n. sp.
- Metriona avia*, *triangulum*, p. 106, *corbetti*, p. 108, India, WEISE, Deutsche ent. Zeitschr. 1897, n. spp.
- Micrispa*, subg. n. for *Gonophora minuta*, GESTRO, p. 65, Ann. Mus. Genova, xxxviii.
- Miopristis (Lophobasis) natalensis*, pl. xvii, fig. 5, p. 245, *subrugosa*, fig. 7, *atrofasciata*, fig. 6, p. 246, Natal, JACOBY, P. Zool. Soc. London, 1897, n. spp.
- Monochirus albertisii*, New Guinea, GESTRO, p. 122, Ann. Mus. Genova, xxxviii, n. sp.
- Monolepta batuensis*, Batu, JACOBY, p. 408, Ann. Mus. Genova, xxxviii, n. sp.
- Myochrous curculionoides*, Bahia, JACOBY, p. 263, Entomologist, 1897, n. sp.
- Neodera fulva*, p. 563, *transversicollis*, p. 564, pl. xxxiv, fig. 6, Madagascar, JACOBY, P. Zool. Soc. London, 1897, n. spp.
- Nerissidius*, synonymical note, JACOBY, p. 550, t. c.
- Nisotra ferruginea*, Nossi-Bé, BRANCSIK, p. 129, Jahresh. Ver. Trencsen. xix; *N. incisicollis*, p. 550, *chapuisi*, p. 551, Madagascar, JACOBY, P. Zool. Soc. London, 1897: n. spp.
- Nodonota grenadensis*, St. Vincent, JACOBY, p. 256, Tr. ent. Soc. London, 1897, n. sp.

*Odontionycha subtilis*, India, WEISE, p. 111, Deutsche ent. Zeitschr. 1897, n. sp.

*Edionychis smithi*, p. 271, Grenada, *sharpi*, St Vincent, p. 272, JACOBY, Tr. ent. Soc. London, 1897, n. spp.

*Oncocephala angulata*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 342, pl. iv, fig. 50; *O. tuberculata*, p. 122, *dorsalis*, p. 123, India, *tenax*, p. 122, Borneo, WEISE, Deutsche ent. Zeitschr. 1897 : n. spp.

*Oocassida*, n. g. for *Cassida pudibunda*, Boh., WEISE, p. 110, Deutsche ent. Zeitschr. 1897.

*Oreomela przewalskii*, Tjan-Schan, *celyphoides*, Dshungaria, JACOBSON, p. 76, Annuaire Mus. St. Petersb. 1897, n. spp.

*Orina alpestris*, *intricata*, habits, WEISE, p. 394, Deutsche ent. Zeitschr. 1897.

*Otioccephala opaca*, variation, PIC, p. 135, Bull. Soc. ent. France, 1897.

*Oxycephala papuana*, New Guinea, GESTRO, p. 450, Termes. Fuzetek, xx, n. sp.

*Pachybrachys excisus*, Asia Minor, WEISE, p. 66, Ent. Zeit. Stettin, lviii; *P. scabripennis*, St. Vincent, etc., JACOBY, p. 254, Tr. ent. Soc. London, 1897 : n. spp.

*Paropsis*: revision, BLACKBURN, P. Linn. Soc. N. S. Wales, 1896 & 1897.

*P. insolens*, p. 645, *sternalis*, p. 646, *extranea*, p. 647, *armata*, p. 648, *chapuisi*, p. 649, *raucipennis*, p. 650, *karatte*, p. 651, *rustica*, *leviventris*, p. 652, *comma*, p. 657, *sylvicola*, p. 658, *baldiensis*, p. 659, *pustulosa*, p. 660, *mixta*, *sordida*, p. 661, *foveata*, p. 662, *montuosa*, p. 663, *rosea*, p. 664, *exsul*, p. 665, *simulans*, *abjecta*, p. 666, *mediocris*, p. 667, *ruficollis*, p. 668, *propria*, *whittonensis*, p. 669, *cribrata*, p. 670, *declivis*, *tatei*, p. 671, *alticola*, p. 672, *victoriae*, p. 673, *solitaria*, p. 674, *lima*, *invalida*, p. 675, *transversalis*, p. 676, *rugulosior*, p. 679, *morosa*, *stigma*, p. 680, *sloanei*, p. 681, *grossa*, p. 682, *interioris*, p. 683, *tincticollis*, *malevola*, p. 684, *leai*, p. 685, *maculiceps*, p. 686, *pustulifera*, p. 687, *alta*, *inornata*, p. 688, *inæqualis*, p. 689, *alpina*, p. 690, *borealis*, *notabilis*, p. 692, *vomicæ*, p. 693, Australia or Tasmania, BLACKBURN, P. Linn. Soc. N. S. Wales, 1896; *P. inops*, p. 168, *punctipennis*, p. 169, *blanda*, p. 170, *creberrima*, p. 171, *versuta*, p. 172, *adelaidæ*, p. 173, *prodroma*, *cygnicola*, p. 174, *brevissima*, p. 175, *vulpina*, p. 176, *fumata*, p. 177, *carpentariae*, p. 178, *bicolora*, *vibex*, p. 179, *simplex*, *crebra*, p. 184, *quadrizonata*, p. 186, *eyrensis*, p. 188, *tarsalis*, p. 189, Australia, BLACKBURN, P. Linn. Soc. N. S. Wales, xxii : n. spp.

*Pedrillia madagascariensis*, Diego-Suarez, JACOBY, p. 244, P. Zool. Soc. London, 1897, n. sp.

*Peploptera quadripunctata*, p. 247, *collaris*, *fulvitaris*, p. 248, *angulato-fasciata*, p. 249, *humeralis*, p. 250, *lateralis*, p. 251, Africa, JACOBY, t. c. n. spp.

*Phædon nigripes*, Grenada, JACOBY, p. 258, Tr. ent. Soc. London, 1897, n. sp.

*Phyllobrotica nigritarsis*, N. America, LINELL, p. 482, P. U. S. Mus. xix, n. sp.

*Phyllotreta mashonana*, *opaca*, Mashonaland, JACOBY, p. 554, P. Zool. Soc. London, 1897, n. spp.

*Physimerus smithi*, St. Vincent, JACOBY, p. 273, Tr. ent. Soc. London, 1897, n. sp.

*Plagioderma purpurea*, Utah, LINELL, p. 482, P. U. S. Mus. xix, n. sp.

*Platypria*: notes on, genus divided (cf. *Dichirispæ*), GESTRO, pp. 110-116, Ann. Mus. Genova, xxxviii.

*P. erethizon*, Song-Chai, GESTRO, p. 112, t. c.; *P. echinogale*, Sumatra, GESTRO, p. 71, Notes Leyden Mus. xix : n. spp.

*Platyvantia? abdominalis*, p. 575, *scutellata*, *pallida*, p. 576, Africa, JACOBY, P. Zool. Soc. London, 1897, n. spp.

- Podontia sacra*, Jericho, WEISE, p. 81, Wien. ent. Zeit. xvi, n. sp.  
*Prionispa distincta*, Sumatra, GESTRO, p. 76, Ann. Mus. Genova, xxxviii, n. sp.  
*Prioptera andrewesi*, India, p. 99, *nigricollis*, Nias island, p. 100, WEISE, Deutsche ent. Zeitschr. 1897, n. spp.  
*Promecothea opacicollis*, New Hebrides, GESTRO, p. 121, Ann. Mus. Genova, xxxviii, n. sp.  
*Pseudabirus*, n. g., near *Abirus* for *P. subcylindricus*, n. sp., Madagascar, FAIRMAIRE, p. 199, Ann. Soc. ent. Belgique, xli.  
*Pseudispella*, n. subg. of *Hispa* for *sulcicollis*, Gyll. KRAATZ, p. 198, Deutsche ent. Zeitschr. 1895. [The entry in Zool. Rec. xxxii, Ins. p. 220, of "*Hispella* subg. n." is erroneous, cf. GESTRO, p. 80, Ann. Mus. Genova, xxxviii.]  
*Pseudivongius*, n. g., *Typophorinae*, for *P. natalensis*, n. sp., Estcourt, JACOBY, p. 546, P. Zool. Soc. London, 1897.  
*Pseudocolaspis chrysites*, subsp. n., *mosambica*, KOLBE, p. 98, Mt. Mus. Hamburg, xiv.  
*P. apicicornis*, p. 531, Mashonaland, JACOBY, P. Zool. Soc. London, 1897, n. sp.  
*Pseudoepitrix suffriani*, St. Vincent, JACOBY, p. 264, Tr. ent. Soc. London, 1897, n. sp.  
*Pseudomalegia*, n. g., p. 546, near *Malegia*, for *P. lefevrei*, n. sp., Natal, p. 547, JACOBY, P. Zool. Soc. London, 1897.  
*Rhembastus cylindriciformis*, p. 537, *maculicollis*, p. 538, pl. xxxiv, fig. 4, Africa, *imitans*, Madagascar, p. 539, *gerstaekeri*, Africa, *apicicornis*, Madagascar, p. 540, JACOBY, t. c. n. spp.  
*Rhyparida madagascariensis*, Madagascar, JACOBY, p. 534, t. c. n. sp.  
*Sagra longipes*, p. 324, *sulcipennis*, p. 325, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *S. bontempsii*, Madagascar, FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli : n. spp.  
*Serraphula*, n. g., p. 556, near *Longitarsus*, for *S. aenea*, n. sp., Mashonaland, p. 557, pl. xxxiv, fig. 7, JACOBY, P. Zool. Soc. London, 1897.  
*Sindia*, n. g., for *Cassida clathrata*, Fab., WEISE, p. 105, Deutsche ent. Zeitschr. 1897.  
*Sphaeroderma femoratum*, Mozambique, p. 557, *hovæ*, Madagascar, p. 558, JACOBY, P. Zool. Soc. London, 1897, n. spp.  
*Syagrus nigrostriatus*, p. 543, *mashonanus*, Mashonaland, *rugicollis*, Madagascar, p. 544, JACOBY, t. c. n. spp.  
*Systema bicolor*, St. Vincent, JACOBY, p. 263, Tr. ent. Soc. London, 1897, n. sp.  
*Taphius*, n. g., *Eumolpinae*, for *T. flavus*, n. sp., Mashonaland, JACOBY, p. 531, P. Zool. Soc. London, 1897.  
*Tellena angusticollis*, Brazil, JACOBY, p. 261, Entomologist, 1897, n. sp.  
*Timarchida*, n. g., p. 571, near *Chrysomela* for *T. deubeli*, n. sp., Siebenbürgen, p. 572, GANGLBAUER, Verh. Ges. Wien, 1897.  
*Urodera lacordairei*, Brazil, JACOBY, p. 261, Entomologist, 1897, n. sp.  
*Wallacea spectabilis*, Sumatra, GESTRO, p. 43, Ann. Mus. Genova, xxxviii, n. sp.  
*Xenomela regeli*, Turkestan, JACOBSON, p. 74, Annuaire Mus. St. Petersb. 1897, n. sp.  
*Xiphispa obtusicollis*, *convexicollis*, p. 403, *valida*, p. 404, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.

## EROTYLIDÆ (incl. LANGURIIDÆ).

[Cf. BRANCSIK (124), FAIRMAIRE (305), HEYDEN (477), KOLBE (601, 602), REITTER (900), SEMENOW (1002).]

List of the *Helota* of the Paris Museum, RITSEMA, pp. 287, 288, Bull. Mus. Paris, 1897.

*Acrolanguria*, n. g. for *A. aneonigra*, n. sp. (not described), KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 117.

*Coptengis scaphidiformis*, *maculicollis*, Halmahera, HEYDEN, p. 558, Abh. Senckenb. Ges. xxiii, n. spp.

*Cyrtotriplax jakolevi*, Jaroslaw, p. 550, *sibirica*, Lake Baikal, p. 553, SEMENOW, Horæ Soc. ent. Ross. xxxi, n. spp.

*Engis semirufula*, Caucasus, *binæva*, E. Siberia, REITTER, p. 123, Wien. ent. Zeit. xvi, n. spp.

*Languria piceola*, Madagascar, FAIRMAIRE, p. 406, Ann. Soc. ent. Belgique, xli, n. sp.

*Penolanguria*, n. g. for *P. minuta*, n. sp. Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 117.

*Triplax dorsalis*, E. Africa, KOLBE, Mt. Mus. Hamburg, xiv; *T. quadricollis*, Nossi-Bé, BRANCSIK, p. 131, Jahresh. Ver. Trencsen. xix : n. spp.

### ENDOMYCHIDÆ.

[Cf. GORHAM (419), REITTER (898), WASMANN (1165).]

*Alexia tetrica*, Tatra Mts., REITTER, p. 47, Wien. ent. Zeit. xvi, n. sp.

*Amphisternus verrucosus*, Java, p. 456, pl. xxxii, fig. 3, *rudopunctatus*, Assam, p. 457, GORHAM, P. Zool. Soc. London, 1897, n. spp.

*Beccaria wallacei*, Aru Islds., p. 463, pl. xxxii, fig. 6, *cardoni*, India, fig. 8, p. 464, GORHAM, t. c., n. spp.

*Bolbomorphus theryi*, China, GORHAM, p. 461, pl. xxxii, fig. 9, t. c., n. sp.

*Cymbachus formosus*, Burma, GORHAM, p. 460, pl. xxxii, fig. 1, t. c., n. sp.

*Encymon cinctipes*, Burma, GORHAM, p. 459, pl. xxxii, fig. 4, t. c., n. sp.

*Eucteanus cruciger*, p. 460, pl. xxxii, fig. 10, *dohertyi*, fig. 11, p. 461, India, GORHAM, t. c., n. spp.

*Indalmus divittatus*, Madagascar, FAIRMAIRE, p. 203, Ann. Soc. ent. Belgique, xli; *I. luzonicus*, Philippines, GORHAM, p. 462, pl. xxxii, fig. 7, P. Zool. Soc. London, 1897 : n. spp.

*Panomora indiana*, Manipur, GORHAM, p. 462, pl. xxxii, fig. 5, t. c., n. sp.

*Philocryptus*, n. n. for *Cryptophilus*, Wasm. nec Reitt., REITTER, p. 257, Deutsche ent. Zeitschr. 1897.

*Symbiotes*: cf. *Mycetophagida*.

*Trochoideus oberihuri*, Madagascar, WASMANN, p. 271, pl. ii, fig. 2, Deutsche ent. Zeitschr. 1897, n. sp.

*Trycherus angolensis*, Angola, pl. xxxii, fig. 2, p. 458, GORHAM, P. Zool. Soc. London, 1897, n. spp.

### COCCINELLIDÆ.

[Cf. BOVIE (121), GORHAM (416), KOLBE (601), REITTER (900, 912), WEISE (1180).]

Note on ♂ genitalia with special reference to Weise's figures in Deutsch. ent. Zeitschr. 1895, VERHOEFF, p. 110, Ent. Nachr. xxiii.

The *Coccinellide* of Belgium, BOVIE, pp. 132-162, Ann. Soc. ent. Belgique, xli.

*Adalia* and *Coccinella*, distinctions, RYE, p. 245, Ent. Mag. xxxiii.

*Adalia saxareata*, Usambara, WEISE, p. 298, Deutsche ent. Zeitschr. 1897, n. sp.

*Alesia usambarica*, *Kwaiensis*, Usambara, WEISE, p. 299, t. c., n. spp.

*Boschalis*, n. g., p. 304, for *Platynaspis usambarica*, n. sp., Usambara, p. 301, WEISE, t. c.

*Chilocorus tibialis*, Usambara, WEISE, p. 300, t. c., n. sp.

*Coccidula sibirialis*, E. Siberia, REITTER, p. 127, Wien. ent. Zeit. xvi, n. sp.

- Coccinella uncina*, Ol. and *lyncea*, synonymy, WEISE, p. 159, Deutsche ent. Zeitschr. 1897.
- Cyrtaulis parvula*, Usambara, WEISE, p. 301, Deutsche ent. Zeitschr. 1897, n. sp.
- Dioria sordida*, figure, pl. xii, fig. 1, p. 217, GORHAM, Biol. Centr.-Amer. Col. vii.
- Epilachna scutellaris*, p. 120, pl. iv, fig. 55, *annulata*, *biplagiata*, *albomaculata*, *flavopustulata*, p. 121, *quadrioculata*, p. 122, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *E. pauli*, p. 289, *vittula*, *erichi*, p. 290, *soror*, *johanna*, p. 291, *hedwiga*, 4-guttata, p. 292, *elisabetha*, p. 293, *usambarica*, p. 294, *matronula*, p. 295, *kwaiensis*, *dolosa*, p. 296, *juvenca*, p. 297, Usambara, WEISE, Deutsche ent. Zeitschr. 1897; *E. abrupta*, pl. xiii, fig. 1, p. 236, *tumida*, fig. 2, Costa Rica, *pustulifera*, Medellin, p. 237, *plagiata*, fig. 3, *picescens*, p. 238, *tristis*, p. 239, *calligrapha*, fig. 8, p. 240, Central America, GORHAM, Biol. Centr.-Amer. Col. vii : n. spp.
- Hemipharus*, n. g. near *Pharus*, for *H. cautus*, n. sp. Usambara, WEISE, p. 303, Deutsche ent. Zeitschr. 1897.
- Hippodamia septemmaculata*, varr. HEYDEN, p. 97, Ent. Nachr. xxiii, and var. n., WIMMEL, p. 163.
- Hyperaspis concolor*, metamorphoses, GIARD, p. 262, Bull. Soc. ent. France, 1897, n. sp.
- Lithophilus araxis*, Ordubad, REITTER, p. 226, Deutsche ent. Zeitschr. 1897, n. sp.
- Lotis rufula*, *pulchra*, Usambara, WEISE, p. 300, Deutsche ent. Zeitschr. 1897, n. spp.
- Neaporia*, n. g., p. 217, *Ortaliides*, for *N. plagioderina*, pl. xii, fig. 2, *indagator*, fig. 3, p. 218, *cribrata*, fig. 4, *cærulea*, *metallica*, fig. 5, p. 219, *argentifrons*, fig. 6, *amabilis*, fig. 7, p. 220, *unipunctata*, fig. 8, *pubescens*, fig. 9, *rugosa*, fig. 10, p. 221, *compta*, fig. 11, *chiriquensis*, fig. 12, *guatemalena*, p. 222, *cælestis*, fig. 13, *viridescens*, *cuprea*, fig. 14, p. 223, n. spp., Central America, GORHAM, Biol. Centr.-Amer. Col. vii.
- Ortaliistes*, n. g. *Ortaliides*, for *O. obesus*, pl. xii, fig. 15, *rubidus*, *germanus*, fig. 16, p. 224, *pexus*, *immersus*, fig. 17, p. 225, n. spp., Central America, GORHAM, Biol. Centr.-Amer. Col. vii.
- Scymnomorphus*, n. g., p. 303, near *Pharus*, for *S. rotundatus*, *niger*, *parvulus*, n. spp. Usambara, p. 304, WEISE, Deutsche ent. Zeitschr. 1897.
- Scymnus (Pullus) usambaricus*, p. 301, *quisquilius*, *S. viduus*, *morosus*, p. 302, Usambara, WEISE, Deutsche ent. Zeitschr. 1897; *S. parramensis*, pl. xii, fig. 19, p. 226, *S. (Pullus) ferrugineus*, p. 227, *bugabensis*, p. 228, *horni*, *jansoni*, p. 229, *hogeti*, *bisbinotatus*, fig. 22, p. 230, *pictus*, fig. 23, *coloratus*, fig. 25, p. 231, *mutatus*, p. 232, *granum*, *grunius*, *corpusculus*, p. 233, *asperus*, fig. 26, *diversus*, p. 234, Central America, GORHAM, Biol. Centr.-Amer. Col. vii : n. spp.
- Thea blanda*, Usambara, WEISE, p. 298, Deutsche ent. Zeitschr. 1897, n. sp.
- Vedalia*: components and affinities, *V. sieboldi*, figure, pl. xii, fig. 24, GORHAM, p. 235, Biol. Centr.-Amer. Col. vii.

## CORYLOPHIDÆ.

- Arthrolips sicardi*, Tunis, GUILLEBEAU, p. 164, Bull. Soc. ent. France, 1897; *A. vittatus*, Marignane, GUILLEBEAU, p. 22, Echange, 1897 : n. spp.

## (B.) HYMENOPTERA.

Notes on classification of the Order, and on the available characters, KONOW, pp. 148-156, Ent. Nachr. xxiii.

### ACULEATA.

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- Eciton foreli*, parasitised by *Stylogaster* (Diptera), TOWNSEND, p. 23, Ann. Nat. Hist. xix.
- E. antillanum*, Grenada (? worker of *E. Klugi*), FOREL, p. 299, Tr. ent. Soc. London, 1897, n. spp.
- Epitritus eurycerus*, New Guinea, pl. xiv, fig. 17, p. 581, EMERY, Termes. Fuzetek, xx, n. sp.
- Epopostruma foliacea*, New Guinea, EMERY, p. 573, pl. xv, figg. 20 & 21, t. c., n. sp.
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- Formicoxenus corsicus*, Corsica, EMERY, p. 68, pl., fig. 2, Mem. Acc. Bologna (5) v, n. sp.
- Iridomyrmex gracilis*, subsp. n., *papuanus*, var. n., *cinerea*, EMERY, p. 572, Ann. Mus. Genova, xxxviii.
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- Leptomyrmex fragilis*, characters, p. 571, pl. i, figg. 17 & 18, EMERY, Ann. Mus. Genova, xxxviii.
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- Hemiteles gumperdensis*, *schaffneri*, p. 505, *semistrigosus*, p. 508, *secerneudus*, p. 509, *longisetosus*, p. 514, *mediovittatus*, p. 525, *plectisciformis*, p. 528, *interstitialis*, p. 533, *flavigaster*, p. 534, *platygaster*, p. 541, *ornaticornis*, p. 547, *semicroceus*, p. 548, *disputabilis*, p. 552, Thuringia, SCHMIEDEKNECHT, *t. c.*; *H. destructivus*, New Zealand, CAMERON, p. 26, Mem. Manchester Soc. xlii : n. spp.
- Herpestomus gaullei*, Algeria, BERTHOUMIEU, p. 350, Ann. Soc. ent. France, 1896, n. sp.
- Himerta*, not distinct from *Euryproctus*; the undescribed species to be called *E. foersteri*, KRIECHBAUMER, pp. 165–167, Ent. Nachr. xxiii.
- Holmgrenia cressoni*, p. 293, *lanceolata*, *piceus*, p. 294, N. America, DAVIS, Tr. Amer. ent. Soc. xxiv, n. spp.
- Homaspis albipes*, *rhadinus*, N. America, DAVIS, p. 308, *t. c.*, n. spp.
- Hoplismenus berthoumieuvi*, Algeria, PIC, p. 265, Bull. Soc. ent. France, 1897; *H. transversus*, Idaho, DAVIS, p. 351, Tr. Amer. ent. Soc. xxiv : n. spp.
- Hyperacmus ovatus*, Connecticut, DAVIS, p. 218, *t. c.*, n. sp.
- Hypotherentes geometra*, Massachusetts, ASHMEAD, p. 167, P. ent. Soc. Washington, iv, n. sp.
- Ichneumon nycthemerus*, habits, MARSHALL, p. 235, Ent. Mag. xxxiii. *I. condecoratus*, note, habitat, KRIECHBAUMER, p. 119, Ent. Nachr. xxiii. *I. albipictus* and *spectabilis*, relations, KRIECHBAUMER, p. 44, Ent. Nachr. xxiii.
- I. declinans*, Europe? KRIECHBAUMER, p. 120, Ent. Nachr. xxiii; *I. corvinipennis*, Algeria, p. 393, *lombardi*, Alps, p. 395, BERTHOUMIEU, Ann. Soc. ent. France, 1896; *I. semicastaneus*, *multifarius*, p. 254, Algeria, *instabilis*, Switzerland, *flamaryi*, France, *spurius*, Germany, p. 255, BERTHOUMIEU, Bull. Soc. ent. France, 1897; *I. ardatus*, p. 7, *alvanus*, *godwin-austeni*, p. 8, India, *mitra*, Borneo, p. 12, pl. xvi, fig. 6, CAMERON, Mem. Manchester Soc. xli, No. 13; *I. hersilia*, p. 7, *actista*, p. 8, *helmsii*, p. 9, *artaxidia*, *ixia*, p. 13, *colensii*, p. 15, *ursula*, p. 16, *browni*, p. 17, *falsus*, p. 18, *leodacus*, p. 19, *machimia*, p. 20, *utetes*, p. 21, *thylma*, p. 22, *novazealandicus*, p. 23, New Zealand, CAMERON, Mem. Manchester Soc. xlii; *I. pacificus*, *pygmaeus*, *faciens*, *nigrotergus*, *blanchardi*, N. America, DAVIS, p. 350, Tr. Amer. ent. Soc. xxiv : n. spp.
- Ischnoscopus synchlora*, N. America, ASHMEAD, p. 168, P. ent. Soc. Washington, iv, n. sp.

- Ischnus montanus*, Grande-Chartreuse, BERTHOUMIEU, p. 256, Bull. Soc. ent. France, 1897, n. sp.
- Labrossya frontosa*, Colorado, DAVIS, p. 275, Tr. Amer. ent. Soc. xxiv, n. sp.
- Lamachus? contortionis*, Columbia, DAVIS, p. 284, *t. c.*, n. sp.
- Lathrolestes nasoni*, p. 264, *similis*, p. 265, N. America, DAVIS, *t. c.*, n. spp.
- Leptopygus orbus*, Michigan, DAVIS, p. 365, *t. c.*, n. sp.
- Lethades*, n. g., *Tryphoninae*, for *texanus*, Ashm., DAVIS, p. 204, *t. c.*
- Limneria zealandica*, New Zealand, CAMERON, p. 36, Mem. Manchester Soc. xlii; *L. (Sinophorus) canarsice*, Illinois, ASHMEAD, p. 126, P. ent. Soc. Washington, iv : n. spp.
- Lissonota tinctipennis*, New Zealand, CAMERON, p. 28, Mem. Manchester Soc. xlii, n. sp.
- Meniscus subflavus*, Texas, DAVIS, p. 371, Tr. Amer. ent. Soc. xxiv, n. sp.
- Mesochorus gigas*, Meran, KRIECHBAUMER, p. 332, Ent. Nachr. xxiii; *M. tachinae*, N. America, ASHMEAD, p. 168, P. ent. Soc. Washington, iv : n. spp.
- Mesoleius vepretorum*, characters, p. 168, *M. rufogibbosus*, ♂, p. 169, KRIECHBAUMER, Ent. Nachr. xxiii.
- M. polyblastoides*, Bavaria, KRIECHBAUMER, p. 170, *t. c.*; *M. convergens*, nuperus, visoris, p. 296, *fidelis*, consors, contractus, idahoensis, p. 297, *convexus*, *pulchranotus*, p. 298, *striatus*, *audax*, *puritanicus*, *pertinax*, p. 299, *conformus*, *articularis*, p. 300, N. America, DAVIS, Tr. Amer. ent. Soc. xxiv : n. spp.
- Mesoleptus sybarita*, p. 32, *comparatus*, p. 33, New Zealand, CAMERON, Mem. Manchester Soc. xlii; *M. nigralis*, p. 314, *pictus*, *riparius*, p. 315, *zebratus*, p. 316, *intimatus*, *nigropleuralis*, *egregius*, p. 317, *striatus*, *torpens*, *scrupulosus*, p. 318, N. America, DAVIS, Tr. Amer. ent. Soc. xxiv : n. spp.
- Metopius ultimatus*, *errantia*, N. America, DAVIS, p. 199, Tr. Amer. ent. Soc. xxiv, n. spp.
- Mima*, n. g., *Exochini*, for *M. washingtonensis*, n. sp., N. America, DAVIS, p. 219, *t. c.*
- Miomernis nasoni*, Illinois, DAVIS, p. 244, *t. c.*, n. sp.
- Monoblastus punctifrons*, p. 261, *aciculatus*, p. 262, N. America, DAVIS, *t. c.*, n. spp.
- Nemon palmaris*, California, DAVIS, p. 287, *t. c.*, n. sp.
- Noeryma*, n. n. for *Eryma*, Först. with *N. lophyri*, n. sp., N. America, ASHMEAD, p. 169, P. ent. Soc. Washington, iv.
- Notomeris glabrosus*, Mt. Washington, DAVIS, p. 242, Tr. Amer. ent. Soc. xxiv, n. sp.
- Notopygus excavatus*, Nevada, DAVIS, p. 309, *t. c.*, n. sp.
- Oetophorus nasoni*, p. 251, *osflavus*, *oculatus*, p. 252, N. America, DAVIS, *t. c.*, n. spp.
- Omoborus kincaidi*, Washington, DAVIS, p. 363, *t. c.*, n. sp.
- Oprion punctatus*, New Zealand, CAMERON, p. 34, Mem. Manchester Soc. xlii, n. sp.
- Orthocentrus petiolaris*, p. 2428, *radialis*, p. 2430, *O. (Picrostigeus*, subg. n., p. 2430) *recticauda*, p. 2431, *O. (Stenomacrus*, subg. n., p. 2433) *crassicornis*, p. 2434, *falcatus*, p. 2435, *ungula*, *compressus*, p. 2436, *flavicornis*, p. 2439, *deletus*, *fortipes*, p. 2442, *curvulus*, *superus*, p. 2443, *cubiceps*, p. 2447, *exserens*, p. 2448, *innotatus*, p. 2449, Sweden, THOMSON, Opusc. xxii; *O. medialis*, N. America, DAVIS, p. 224, Tr. Amer. ent. Soc. xxiv : n. spp.
- Otacustes perilli*, figg., HOWARD, p. 32, Bull. Dep. Agric. ent. Tech. v.
- Otiophorus innumeralis*, N. America, DAVIS, p. 276, *t. c.*, n. sp.
- Otoblastus bidens*, p. 272, *cultiformis*, *erodens*, p. 273, N. America, DAVIS, Tr. Amer. ent. Soc. xxiv, n. spp.

- Paniscus foveatus*, New Zealand, CAMERON, p. 36, Mem. Manchester Soc. xlii, n. sp.
- Parabatus millierata*, Cannes, KRIECHBAUMER, p. 316, Ent. Nachr. xxiii, n. sp.
- Perithous mediator*, habits, BORRIES, pp. 153-158, Vid. Medd. 1897.
- Pezomachus insolitus*, N. America, HOWARD, p. 33, Bull. Dep. Agric. ent. Tech. v, n. sp.
- Phæogenes pici*, Algeria, BERTHOUMIEU, p. 378, Ann. Soc. ent. France, 1896; *P. phycidis*, N. America, ASHMEAD, p. 169, P. ent. Soc. Washington, iv : n. spp.
- Phæstus gloriosus*, Washington, DAVIS, p. 292, Tr. Amer. ent. Soc. xxiv, n. sp.
- Phobetor albinopennis*, N. America, DAVIS, p. 311, t. c., n. sp.
- Phytodietus* † *truncatus*, Dakota, DAVIS, p. 371, t. c., n. sp.
- Picrostigeus*, subg. n. of *Orthocentrus*, q. v.
- Pimpla*: revision of European, SCHMIEDEKNECHT, Illustr. Wochenschr. ii, p. 506, etc. *P. inquisitor*, habits, life-history, HOWARD, pp. 8-17, Bull. Dep. Agric. ent. Tech. v.
- P. ægyptiaca*, pp. 510 & 633, *cleopatra*, pp. 539 & 634, Egypt, SCHMIEDEKNECHT, Illustr. Wochenschr. ii; *P. pleuralis*, Transvaal, BUYSSON, p. 352, Ann. Soc. ent. France, 1897; *P. componotus*, *stultor*, *defensor*, N. America, DAVIS, p. 367, Tr. Amer. ent. Soc. xxiv : n. spp.
- Platylabus incubus*, *bakeri*, *foxi*, p. 352, *opacitas*, p. 353, N. America, DAVIS, Tr. Amer. ent. Soc. xxiv, n. spp.
- Polyblastus binotatus*, Bavaria, KRIECHBAUMER, p. 190, Ent. Nachr. xxiii; *P. leviculus*, Colorado, DAVIS, p. 263, Tr. Amer. ent. Soc. xxiv : n. spp.
- Polycinetus solitarius*, Michigan, DAVIS, p. 307, t. c., n. sp.
- Polygonus platynus*, *mentalis*, *unicus*, *suburbe*, N. America, DAVIS, p. 306, t. c., n. spp.
- Polysphincta spinosa*, *bicarinata*, *slossonæ*, p. 368, *minuta*, *granulosa*, p. 369, N. America, DAVIS, t. c., n. spp.
- Polyterus franciscensis*, N. America, DAVIS, p. 289, t. c., n. sp.
- Proclitus flagellatus*, Colorado, DAVIS, p. 246, t. c., n. sp.
- Prosmosus punctifrons*, *cymbaformus*, p. 309, *elongatus*, p. 310, N. America, DAVIS, t. c., n. spp.
- Pseudometopius*, n. g. for *Metopius hagenii*, DAVIS, p. 202, t. c.
- Pyrachmon idahoensis*, *aldrichi*, Idaho, DAVIS, p. 363, t. c., n. spp.
- Quadrigana*, n. g. for *Tryphon americana*, Cress., DAVIS, p. 280, t. c.
- Rhæstes incessans*, p. 311, *difficilis*, p. 312, Colorado, DAVIS, t. c., n. spp.
- Rhimphalea brevicorpa*, Illinois, DAVIS, p. 274, t. c., n. sp.
- Scopiorus gillettei*, *expansa*, *hiatus*, p. 258, *extricatus*, p. 259, N. America, DAVIS, t. c., n. spp.
- Spanotecnus illadus*, p. 303, *obscurellus*, p. 304, N. America, DAVIS, t. c., n. spp.
- Spilocryptus canarsie*, Illinois, ASHMEAD, p. 124, P. ent. Soc. Washington, iv, n. sp.
- Spudæa ovale*, Michigan, DAVIS, p. 291, Tr. Amer. ent. Soc. xxiv, n. sp.
- Stenomacrus*, subg. n. of *Orthocentrus*, q. v.
- Stenomacrus intritus*, Canada, *hastatus*, California, DAVIS, p. 225, Tr. Amer. ent. Soc. xxix, n. spp.
- Stiphrosomus obesa*, Virginia, DAVIS, p. 312, t. c., n. sp.
- Synchnoleter spatiosus*, Canada, DAVIS, p. 306, Tr. Amer. ent. Soc. xxiv, n. sp.
- Synchnoportus rufopectus*, N. America, ASHMEAD, p. 169, P. ent. Soc. Washington, iv, n. sp.
- Syndipnus longipes*, Texas, DAVIS, p. 288, t. c., n. sp.
- Synmelix*, Forst., validity discussed, KRIECHBAUMER, p. 186, Ent. Nachr. xxiii.



- S. sieboldi*, Danzig? *id.* *t. c.* p. 188, n. sp.  
*Thibetoides*, n. g., *Tryphoninae* for *T. flosamoris*, n. sp., California, DAVIS, p. 205, Tr. Amer. ent. Soc. xxiv.  
*Trematopygus fuscus*, *rotundatus*, Michigan, DAVIS, p. 277, *t. c.*, n. spp.  
*Trichoma reticulata*, Michigan, DAVIS, p. 361, *t. c.*, n. sp.  
*Trogus apicatus*, New Hampshire, DAVIS, p. 352, *t. c.*, n. sp.  
*Tryphon melanocerus*, Gr. referred to *Amorphognathon*, Först., KRIECHBAUMER, p. 185, Ent. Nachr. xxiii.  
*Tryphon bilineolatus*, Trostberg, KRIECHBAUMER, p. 189, Ent. Nachr. xxiii; *T. nigrum*, Michigan, DAVIS, p. 281, Tr. Amer. ent. Soc. xxiv : n. spp.  
*Tylecominus umbrosus*, p. 203, *indigus*, *minoris*, p. 204, N. America, DAVIS, *t. c.*, n. spp.  
*Volucris*, n. g. for *Tryphon semirufus*, DAVIS, p. 287, *t. c.*  
*Xenopimpla*, n. g. for *Rhyssa semipunctata*, Kirby, CAMERON, p. 26, Mem. Manchester Soc. xlii.  
*Xylonomus catomus*, Idaho, DAVIS, p. 372, Tr. Amer. ent. Soc. xxiv, n. sp.  
*Zacalles magnus*, New Hampshire, DAVIS, p. 283, *t. c.*, n. sp.  
*Zachrasta obesa*, Michigan, DAVIS, p. 361, *t. c.*, n. sp.  
*Zemiodus coloradensis*, p. 323, *magnicornis*, p. 324, N. America, DAVIS, *t. c.*, n. spp.

## BRACONIDÆ.

- MARSHALL (718) has commenced a supplementary volume to the *Bracônidae* of Europe and Algeria.  
 Part VII of monograph of British *Bracônidae*, including *Dacnusa*, *Gyrocampa*, *Chorebus*, *Chænusa*, MARSHALL, pp. 1-31, pl. i, Tr. ent. Soc. London, 1897.  
 Useful *Bracônidae*, DOLLES (262).  
*Alysia stramineipes*, New Zealand, CAMERON, p. 39, Mem. Manchester Soc. xlii, n. sp.  
*Apanteles delicatus*, N. America, HOWARD, pp. 54 & 24, Bull. Dep. Agric. ent. Tech. v; *A. canarsis*, Illinois, ASHMEAD, p. 127, P. Ent. Soc. Washington, iv; *A. euchaetis*, *murtfeldtiæ*, p. 159, *nemorice*, p. 160, *parorgyæ*, p. 161, *schizura*, *radiatus*, p. 162, N. America, ASHMEAD, *t. c.* : n. spp.  
*Aphidius ribis*, Massachusetts, ASHMEAD, p. 167, *t. c.*, n. sp.  
*Ascogaster crenulatus*, New Zealand, CAMERON, p. 37, Mem. Manchester Soc. xlii, n. sp.  
*Atanycolus barcinonensis*, Barcelona, MARSHALL, p. 115, Spec. Hym. v, bis, n. sp.  
*Bracon* (*Vipio*) *formidabilis*, Avignon, p. 30, *gorgoneus*, Barcelona, p. 32, *B. incisus*, Sicily, *mimetus*, Italy, p. 40, *leptus*, Barcelona, p. 64, *triasspis*, Italy, p. 65, *trypanophorus*, *dolichurus*, France, *xystus*, Barcelona, p. 66, *konovi*, Mecklenburg, p. 67, *virgatus*, England, *hilaris*, p. 68, *zonites*, p. 69, *genuensis*, Italy, *instabilis*, England, p. 70, *dorycles*, Spain, *balteatus*, Mecklenburg, p. 71, *baridii*, France, p. 72, *glaphyrus*, Italy, *eutrephe*, Balearic islands, p. 73, *comptus*, Spain, p. 74, MARSHALL, Spec. Hym. v, bis; *B. jocosoides*, *ribesiferus*, Transvaal, BUYSSON, p. 353, Ann. Soc. ent. France, 1897; *B. borneensis*, p. 13, *disimulandus*, p. 14, *charaxus*, p. 15, Borneo, CAMERON, Mem. Manchester Soc. xli, No. 13 : n. spp.  
*Cephalopliës*, n. g. for *C. mocsaryi*, n. sp., Budapest, SZÉPLIGETI, p. 600, Termes. Füzetek, xx.  
*Clinocentrus stigmaticus*, England, MARSHALL, p. 131, Spec. Hym. v, bis, n. sp.

- Celothorax*, n. g. *Microgasterinæ*, ASHMEAD, p. 165, P. ent. Soc. Washington, iv.
- Dendrosoter flaviceps*, Italy, MARSHALL, p. 124, Spec. Hym. v, bis, n. sp.
- Hypomicrogaster*, n. g. *Microgasterinæ*, ASHMEAD, p. 166, P. ent. Soc. Washington, iv.
- Meteorus salicorniæ*, p. 189, *thuringiacus*, p. 190, *pachypus*, p. 207, Europe, SCHMIEDEKNECHT, Illustr. Wochenschr. ii; *M. nova-zealandicus*, New Zealand, CAMERON, p. 38, Mem. Manchester Soc. xlii : n. spp.
- Microplitis hyphantiæ*, Illinois, ASHMEAD, p. 164, P. ent. Soc. Washington, iv, n. sp.
- Monolexis fæsteri*, Thuringia, MARSHALL, p. 106, Spec. Hym. v, bis, n. sp.
- Pelecystoma eupoeiæ*, N. America, ASHMEAD, p. 113, Canad. Ent. xxix, n. sp.
- Phænodus pallidipes*, Thuringia, MARSHALL, p. 96, Spec. Hym. v, bis, n. sp.
- Protapanteles*, n. g., *Microgasterinæ*, ASHMEAD, p. 166, P. ent. Soc. Washington, iv.
- P. ephyrae*, *tortricis*, N. America, ASHMEAD, p. 163, t. c., n. spp.
- Protomicroplitis*, n. g., *Microgasterinæ*, ASHMEAD, p. 167, t. c.
- Pseudapanteles*, n. g., *Microgasterinæ*, ASHMEAD, p. 166, t. c.
- Rhogas hemipterus*, Tunis, MARSHALL, p. 137, Spec. Hym. v, bis, n. sp.
- Rhopitocentrus*, n. g., p. 99, for *R. piceus*, n. sp., Italy, p. 100, MARSHALL, t. c.
- Sulydus*, n. g., near *Hedylus*, for *S. marshalli*, n. sp., Transvaal, pl. xi, fig. 1, BUYSSON, p. 354, Ann. Soc. ent. France, 1897.
- Vipio longicollis*, Transvaal, BUYSSON, p. 353, t. c.; *V. gestroi*, Australia, MONTERO, p. 119, Feuille Natural. xxvii : n. spp.
- Zombrus*, n. g., near *Bracon*, p. 10, for *Z. anisopus*, n. sp., Arabia, p. 12, MARSHALL, Spec. Hym. v, bis.

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- Megischus floridanus*, *canadensis*, N. America, DAVIS, p. 349, Tr. Amer. ent. Soc. xxiv, n. spp.
- Trigonalis sulcatus*, New Jersey, DAVIS, p. 349, Tr. Amer. ent. Soc. xxiv; *T. scutellaris*, p. 267, *maculifrons*, p. 268, *apicipennis*, p. 269, *flavonotata*, p. 270, *fasciatipennis*, p. 271, Mexico, *championi*, Guatemala, p. 273, CAMERON, Ann. Nat. Hist. xix : n. spp.

## CHALCIDIDÆ (inclusive of MYMARIDÆ).

- Wide distribution of parasites of *Coccida*, HOWARD, pp. 135 & 136, P. ent. Soc. Washington, iv.
- Parasites of Hessian flies, MARCHAL (707).
- Synonymy and orthography of numerous genera, cf. DALLA TORRE, Wien. ent. Zeit. xvi, pp. 83-88.
- Alaphus fusculus*, habits, ENOCK, p. xvii, P. ent. Soc. London, 1897.
- Archenomus*, n. g., *Aphelininæ*, for *A. bicolor*, n. sp., bred from *Diaspis ostreaformis*, HOWARD, p. 136, P. ent. Soc. Washington, iv.
- Arrhenophagus chionaspidis*, ♂, HOWARD, p. 135, t. c.
- Ascodes albicans*, figg., ? a quaternary parasite, HOWARD, p. 40, Bull. Dep. Agric. ent. Tech. v.
- Azotus*, n. g., *Aphelininæ*, for *A. marchali*, n. sp., bred from *Diaspis ostreaformis*, HOWARD, p. 138, P. ent. Soc. Washington, iv.
- Baetomus coxalis*, France, from Hessian fly, ASHMEAD, p. 135, Psyche, viii, n. sp.

- Bootania*, n. n. for *Metamorphia*, Walk. nec Hubn., DALLA TORRE, p. 86, Wien. ent. Zeit. xvi.
- Bubekia*, n. n. for *Brachycrepis*, Ashm. nec Lec., DALLA TORRE, p. 84, t. c.
- Cameronella*, n. n. for *Panthalis*, Cam., DALLA TORRE, p. 87, t. c.
- Chalcis ovata*, habits, HOWARD, p. 25, Bull. Dep. Agric. ent. Tech. v.
- Coccophagus fletcheri*, Canada, HOWARD, p. 63, Bull. Dep. Agric. Ent. vii, n. sp.
- Cratotechus smerincki*, N. America, ASHMEAD, p. 158, P. ent. Soc. Washington, iv, n. sp.
- Destefania*, n. n. for *Sternodes*, Dest., DALLA TORRE, p. 88, Wien. ent. Zeit. xvi.
- Dibrachys boucheanus*, habits, figg., HOWARD, p. 35, Bull. Dep. Agric. ent. Tech. v.
- Elachistus cidariæ*, Massachusetts, ASHMEAD, p. 157, P. ent. Soc. Washington, iv.
- Elaemus meteori*, Illinois, ASHMEAD, p. 128, P. ent. Soc. Washington, iv; *E. atratus*, N. America, HOWARD, pp. 56, 40, figg., Bull. Dep. Agric. ent. Tech. v : n. spp.
- Encyrtus thyreodontis*, Massachusetts, ASHMEAD, p. 156, P. ent. Soc. Washington, iv, n. sp.
- Eulophus incongruus*, Massachusetts, ASHMEAD, p. 158, t. c., n. sp.
- Eupelminus*, n. n. for *Urocryptus*, Westw. nec Temn., DALLA TORRE, p. 85, Wien. ent. Zeit. xvi.
- Eupelmus limnerie*, N. America, HOWARD, p. 56 & p. 39, fig., HOWARD, Bull. Dep. Agric. ent. Tech. v, n. sp.
- Færsterella*, n. n. for *Hypirbius*, Först. nec Stål, DALLA TORRE, p. 86, Wien. ent. Zeit. xvi.
- Ganahlia*, n. g. for part of *Derostenus*, DALLA TORRE, p. 85, Wien. ent. Zeit. xvi.
- Habrocytus phycidis*, N. America, ASHMEAD, p. 157, P. ent. Soc. Washington, iv, n. sp.
- Halidayella*, n. n. for *Halidea*, Först., DALLA TORRE, p. 85, Wien. ent. Zeit. xvi.
- Holcæus cecidomyiæ*, France, from Hessian-fly, ASHMEAD, p. 136, Psyche, viii, n. sp.
- Howardia*, n. g. for *Bothriothorax peckhamii*, Ashm., DALLA TORRE, p. 86, Wien. ent. Zeit. xvi.
- Isosoma orchidearum*, habits etc., DECAUX, pp. 233-237, Naturaliste, 1897.
- Kriechbaumerella*, n. n. for *Cælops*, Kriechb. nec Blyth., DALLA TORRE, p. 84, Wien. ent. Zeit. xvi.
- Monodontomerus stigma*, characters, PATTON, p. 59, Canad. Ent. xxix.
- Myrmecomimesis*, n. n. for *Myrmecopsis*, Walk., DALLA TORRE, p. 87, Wien. ent. Zeit. xvi.
- Notaspidium*, n. n. for *Notaspis*, Walk., DALLA TORRE, p. 87, t. c.
- Oophthora*, n. g., p. 250, *Trichogrammatinæ*, for *O. semblidis*, n. sp., Sweden, in eggs of *S. lutarius*, p. 253, pl. v, AURIVILLIUS, Ent. Tidskr. 1897.
- Perilampus mexicanus*, p. 265, *antennatus*, p. 266, Mexico, CAMERON, Ann. Nat. Hist. xix, n. spp.
- Polychromatium*, n. n. for *Polychroma*, Westw., DALLA TORRE, p. 88, Wien. ent. Zeit. xvi.
- Polyscelis*, n. n. for *Polycelis*, Thoms., DALLA TORRE, p. 87, t. c.
- Pteromalus cuproidens*, N. America, HOWARD, p. 55, Bull. Dep. Agric. ent. Tech. v, n. sp.
- Smicra ardens*, Mexico, p. 262, *divinatrix*, Honduras, p. 263, *fasciola*, *armillata*, Mexico, p. 264, CAMERON, Ann. Nat. Hist. xix, n. spp.
- Spilochalcis debilis*, figg., note, HOWARD, p. 33, Bull. Dep. Agric. ent. Tech. v.

- S. mesilla*, New Mexico, COCKERELL, p. 403, Ann. Nat. Hist. xix, n. sp.  
*Syntomosphyrum œurus*, fig., note, HOWARD, p. 38, Bull. Dep. Agric. ent. Tech. v.  
*Tetrastichus cærulescens*, Illinois, ASHMEAD, p. 130, P. ent. Soc. Washington, iv, n. sp.

## PROCTOTRYPIDÆ.

- Parasites of the Hessian-fly, MARCHAL (707).  
 Embryology of *Platygaster*, MARCHAL (710), KULAGIN (642).  
*Betyla fulva*, Cam. (= *Tanyzonus boletophilæ*, Marsh.), CAMERON, p. 41, Mem. Manchester Soc. xlii.  
*Epyris orizabæ*, p. 273, *palliditarsis*, p. 274, *scutellaris*, p. 275, *montezuma*, p. 276, Mexico, CAMERON, Ann. Nat. Hist. xix, n. spp.  
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*Xanthoteras*, n. g., type *Biorrhiza forticornis*, ASHMEAD, p. 262, Canad. Ent. xxix.  
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*Chalinus*, n. g. for *Oryssus imperialis* and *plumicornis*, KONOW, p. 605, Termes. Fuzetek, xx.

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- D. proserpina*, Roraima, pl. iii, figg. 1-3, p. 11, *cretacea*, Espirito Santo, figg. 4 & 5, p. 12, *acutipennis*, Trinidad, p. 14, figg. 10 & 11, SMITH & KIRBY, t. c.; *D. tricolor*, hab. ? p. 5, pl. ii, figg. 1 & 2, *rhomboidea*, Nanta, p. 6, figg. 3-5, *nella*, New Grenada, p. 7, figg. 6-8, SMITH & KIRBY, Rhop. exot. Pierinæ, ii : n. spp.
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*Danaüs*: varr. from Lombok, FRUHSTORFER, p. 119, *Berlin. ent. Zeitschr.* 1897. *D. ishma*, var. n. *tontoliensis*, FRUHSTORFER, p. 105, *Miscell. ent.* v. *D. kuekenthali*, figure, pl. xx, fig. 5, description, p. 384, PAGENSTECHER, *Abh. Senckenb. Ges.* xxiii. *D. sita*, early stages, MACKINNON, p. 213, pl. v, fig. 1, *J. Bombay Soc.* xi. *D. euripus*, curious habits, ULE (1108). *D. archippus*, popular notes on, WEED (1178), pp. 137-144.

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*Senadipa*, n. g., type *Lexias satrapes*, MOORE, p. 74, Lep. Ind. iii.  
*Sephisa dichroa*, pupa, MACKINNON, pl. v, fig. 6, p. 369, J. Bombay Soc. xi.  
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*Epinephèle intermedia*, var. n. *collina*, RÖBER, p. 267, Ent. Nachr. xxiii.  
*Erebia æthiops*, var. n. *æthopiella*, STAUDINGER, p. 324, Deutsche ent. Zeitschr. Lep. x. *E. embla*, var. n. *succulenta*, ALPHÉRAKY, p. 325, Romanoff Mem. ix. *E. duponcheli*, note on, CH. OBERTHÜR, p. 290, Bull. Soc. ent. France, 1897.  
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*Lasiommata mæcula* (= *laurion*, N.), NICÉVILLE, p. 217, J. Bombay Soc. xi.  
*Lasiophila regia*, Bolivia, STAUDINGER, pl. v, fig. 11, p. 136, Deutsche ent. Zeitschr. Lep. x, n. sp.  
*Lethe confusa*, n. n. for *rohria*, auct., AURIVILLIUS, p. 142, Ent. Tidskr. 1897. *L. isana*, fig. 2, *vaiivarta*, fig. 3, pl. u, early stages, MACKINNON, p. 215, J. Bombay Soc. xi.  
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*Lymanopoda marianna*, Venezuela, pl. v, fig. 6, p. 146, *galactea*, fig. 12, p. 147, Bolivia, STAUDINGER, Deutsche ent. Zeitschr. Lep. x, n. spp.

- Manerebia*, n. g. for *M. cyclopina*, pl. v, fig. 4, p. 139, *cyclopella*, p. 141, *cyclops*, *typhlops*, p. 142, *thlyphosella*, p. 143, n. spp., BOLIVIA, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
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- Eneis tarpeia*, var. n. *lederi*, ALPHÉRAKY, p. 196, Romanoff Mem. ix.
- E. verdanda*, Central Asia, STAUDINGER, p. 349, Deutsche ent. Zeitschr. Lep. x, n. sp.
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- Patala yama*, early stages, MACKINNON, p. 216, pl. v, fig. 4, J. Bombay Soc. xi.
- Pedaliodes phæaca*, Venezuela, pl. vi, fig. 1, p. 123, *phæina*, Bogotá, p. 124, *thiemei*, Colombia, p. 126, *antonia*, fig. 3, p. 127, *anina*, p. 128, *hevitsoni*, pl. vi, fig. 6, *illimania*, p. 129, *subtangula*, fig. 2, p. 130, *apicalis*, fig. 4, *pronoë*, fig. 8, p. 132, *phrasa*, *porrima*, fig. 5, p. 134, *emma*, fig. 7, p. 135, Bolivia, STAUDINGER, Deutsche ent. Zeitschr. Lep. x, n. spp.
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#### ERYCINIDÆ, LIBYTHÆIDÆ, LEMONIIDÆ, ELYMNIIDÆ.

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- Bruasa borneensis*, figg. 4-6, figured, SMITH, Rhop. exot. iii, Elymnias, ii.
- Dicallaneura ostrina*, ♂, figg. 1 & 2, *princessa*, figg. 3 & 4, *semirufa*, figg. 5 & 6, figured, SMITH & KIRBY, Rhop. exot. Dicallaneura, i.
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*Bibasis uniformis*, Java, *sambavana*, Sambawa, ELWES & EDWARDS, p. 305, Tr. Zool. Soc. London, xiv, n. spp.

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- Euhampsonia*, n. g., for *Nadata*, Hamps., DYAR, p. 16, Tr. Amer. ent. Soc. xxiv.
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- Gingla æqualis*, figured, DRUCE, p. 393, pl. lxxvii, fig. 13, Biol. Centr.-Amer. Heter. ii.
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- Orgyia falcata*, figure, pl. lxxix, fig. 7, Biol. Centr.-Amer. Heter. ii.
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- Eublemma glaucata*, E. Africa, HOLLAND (1028), p. 415, pl., fig. 11; *E. silicula*, India, SWINHOE, p. 167, Ann. Nat. Hist. xix; *E. agrapta*, Ceylon, HAMPSON, p. 449, J. Bombay Soc. xi; *E. orthopetes*, Queensland, MEYRICK, p. 375, Tr. ent. Soc. London, 1897 : n. spp.
- Euclidia futilis*, E. Siberia, STAUDINGER, pl. ix, fig. 28, p. 341, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Eumegethes*, n. g. for *Thalpochares tenuis*, n. sp., Sfax, pl. iv, fig. 6, STAUDINGER, t. c.
- Euplexia hyalophora*, p. 442, *conservuloides*, p. 443, India, HAMPSON, J. Bombay Soc. xi, n. spp.
- Eurois espumosa*, Ecuador, DOGNIN, p. 246, Ann. Soc. ent. Belgique, xli, n. sp.
- Eustrotia pulida*, p. 414, *paloma*, p. 415, Ecuador, DOGNIN, t. c., n. spp.
- Eutelia harmonica*, Sikhim, HAMPSON, p. 453, pl. A, fig. 4, J. Bombay Soc. xi, n. sp.
- Focilla laloides, golosa*, Ecuador, DOGNIN, p. 418, Ann. Soc. ent. Belgique, xli, n. spp.
- Gloriana*, n. g. for *Miniodes ornata*, KIRBY (587), v, p. 169.
- Gracilipalpus turcomanica*, figure, ALPHÉRAKY, pl. viii, fig. 11, Romanoff Mem. ix.
- Grammodes ocellata*=(*excellens*, Luc.), LOWER, p. 30, P. Linn. Soc. N. S. Wales, xxii.
- G. netta*, E. Africa, HOLLAND (1028), p. 418, pl., fig. 9, n. sp.
- Grumia flora*, figure, ALPHÉRAKY, pl. i, fig. 10, Romanoff Mem. ix.
- Gyrtona camptobasis*, Sikhim, HAMPSON, p. 454, pl. A, fig. 20, J. Bombay Soc. xi, n. sp.
- Hadena literosa*, var. n. *subarcta*, STAUDINGER, p. 283, pl. ix, fig. 14, Deutsche ent. Zeitschr. Lep. x. *H. decipiens*, figure, pl. xiii, fig. 13, ALPHÉRAKY, Romanoff Mem. ix. *H. ferrago*, var. n. *terrago*, ALPHÉRAKY, p. 334, pl. xiv, fig. 9, t. c. *H. basilinea*, habits and larva, SJÖSTEDT, Ent. Tidskr. 1897, pp. 49-53.
- H. dorriesi*, E. Siberia, STAUDINGER, pl. ix, fig. 26, p. 336, Deutsche ent. Zeitschr. Lep. x; *H. subpulchra*, Korea, ALPHÉRAKY, p. 173, pl. xii, fig. 11, Romanoff Mem. ix; *H. bryochlora*, Sydney, MEYRICK, p. 371, Tr. ent. Soc. London, 1897; *H. hita*, Ecuador, DOGNIN, p. 413, Ann. Soc. ent. Belgique, xli : n. spp.

- Haderonia optima*, Nan-Chan, ALPHÉRAKY, p. 236, pl. xii, fig. 7, Romanoff Mem. ix, n. sp.
- Hecatera mohosa*, Ecuador, DOGNIN, p. 412, Ann. Soc. ent. Belgique, xli, n. sp.
- Heliopholus grumi*, pl. i, fig. 5, *anachoretoides*, fig. 6, figures, ALPHÉRAKY, Romanoff Mem. ix.
- Heliothis leucatma*, Australia, MEYRICK, p. 368, Tr. ent. Soc. London, 1897, n. sp.
- Heterographa sibirica* (no locality), ALPHÉRAKY, p. 215, pl. xiii, fig. 12, Romanoff Mem. ix, n. sp.
- Hydrilla? maculifera*, Palestine, STAUDINGER, p. 287, pl. iv, fig. 22, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Hydræcia osseola* = (*burkhana*, Alph.), figure, pl. iii, fig. 4, ALPHÉRAKY, p. 31, Romanoff Mem. ix; *H. inanis*, natural history, HOWARD, p. 40, Bull. Dep. Agric. Ent. vii; *H. purpurifascia*, habits, early stages, SLINGERLAND, p. 161, pl. vi, Canad. Ent. xxix.
- Hyela latifasciata, bilineata*, India, HAMPSON, p. 446, J. Bombay Soc. xi : n. spp.
- Hypena humuli*, habits, HOWARD, p. 44, Bull. Dep. Agric. Ent. vii.
- H. gravalis*, Mauritius, MABILLE, p. 225, Ann. Soc. ent. France, 1897; *H. mesochra*, Victoria, LOWER, p. 52, Tr. R. Soc. S. Austral. xxi : n. spp.
- Hyperaucha*, n. g., p. 383, *Plusiadæ* for *H. octias*, n. sp., New Zealand, p. 384, MEYRICK, Tr. ent. Soc. London, 1897.
- Hypomecia*, n. g. for *Epimecia quadrivirgula*, Mab., STAUDINGER, p. 291, Deutsche ent. Zeitschr. Lep. x.
- Hypothripa polia*, India, HAMPSON, p. 452, J. Bombay Soc. xi, n. sp.
- Hypsophila grumi*, figure, ALPHÉRAKY, pl. iii, fig. 9, Romanoff Mem. ix.
- Isochlora albivitta*, pl. i, fig. 3, *grumi*, fig. 2, *arctomys*, pl. ii, figs. 11 & 12, figured, ALPHÉRAKY, Romanoff Mem. ix. *I. herbacea*, figure, ALPHÉRAKY, pl. xiii, fig. 8, t. c.
- Jaspidia jankowskii*, Amur, ALPHÉRAKY, p. 160, pl. xi, fig. 6, t. c., n. sp.
- Lagoptera violetta*, description, figure, p. 449, pl. xx, fig. 13, PAGENSTECHER, Abh. Senckenb. Ges. xxxiii.
- Leucania putrida*, var. n. *palæstinæ*, KALCHBERG, p. 174, Deutsche ent. Zeitschr. Lep. x. *L. unipunctata*: natural history, SLINGERLAND (1924), *L.* swarm in New Hampshire, SOULE, p. 11, Psyche, viii.
- L. languida*, Palestine, STAUDINGER, p. 284, pl. ix, fig. 15, Deutsche ent. Zeitschr. Lep. x; *L. laniata*, Sikkim, HAMPSON, p. 444, pl. A, fig. 22, J. Bombay Soc. xi; *L. micrastra*, New Zealand, MEYRICK, p. 383, Tr. ent. Soc. London, 1897; *L. tiniloides, sagita*, p. 244, *mocoides*, p. 245, *amina*, p. 246, Ecuador, DOGNIN, Ann. Soc. ent. Belgique, xli : n. spp.
- Leucanitis boisdeffrei*, var. n. *palæstinensis*, pl. ix, fig. 19, p. 299, STAUDINGER, Deutsche ent. Zeitschr. Lep. x. *L. scolopax*, figure, ALPHÉRAKY, pl. iii, fig. 10, Romanoff Mem. ix. *L. altibaga*, figure, pl. vii, fig. 9, ALPHÉRAKY, t. c.
- Luperina malitiosa*, figure, ALPHÉRAKY, pl. ii, fig. 5, t. c.
- L. ? inutilis*, Korea, ALPHÉRAKY, p. 171, pl. xii, fig. 10, t. c., n. sp.
- Mamestra texturata*, figure, pl. iii, fig. 2, *satanella*, pl. ii, fig. 14, ALPHÉRAKY, Romanoff Mem. ix. *M. potanini*, figure, pl. ix, fig. 10, ALPHÉRAKY, t. c. *M. circumcincta*, characters, SMITH, p. 57, Canad. Ent. xxix.
- M. softa*, Palestine, STAUDINGER, p. 275, pl. iv, fig. 15, Deutsche ent. Zeitschr. Lep. x; *M. persa*, Persia, ALPHÉRAKY, p. 212, Romanoff Mem. ix; *M. denuda*, Ecuador, DOGNIN, p. 408, Ann. Soc. ent. Belgique, xli : n. spp.
- Mania ? pentica*, Ecuador, DOGNIN, p. 416, Ann. Soc. ent. Belgique, xli, n. sp.
- Mecodina obscurata*, India, *napa*, Singapore, SWINHOE, p. 168, Ann. Nat. Hist. xix, n. spp.

- Meliana xylogramma*, Queensland, MEYRICK, p. 367, Tr. ent. Soc. London, 1897, n. sp.
- Metopoplus fasseni*, figure, ALPHÉRAKY, pl. viii, fig. 6, Romanoff Mem. ix.
- Micrapatetis*, n. g., *Caradrinides*, for *M. orthozona*, n. sp., Queensland, MEYRICK, p. 369, Tr. ent. Soc. London, 1897.
- Mimorusa pictalis*, India, HAMPSON, p. 450, J. Bombay Soc. xi, n. sp.
- Moma* (*Diphthera*) *champa*, figure, ALPHÉRAKY, pl. xiii, fig. 4, Romanoff Mem. ix.
- Mormoscopa*, n. g., *Plusiades*, for *M. crossodora*, n. sp., N. S. Wales, MEYRICK, p. 371, Tr. ent. Soc. London, 1897.
- Musothyma*, n. g., *Plusiades*, for *M. cyanastis*, n. sp., Queensland, MEYRICK, p. 375, t. c.
- Mythimna pectinata*, referred to *Monostola*, figure, ALPHÉRAKY, p. 32, pl. ii, fig. 4, Romanoff Mem. ix.
- Namangana cretacea*, figure, pl. viii, fig. 10, ALPHÉRAKY, t. c.
- Nantena*, n. n. for *Ascalapha*, Hb., KIRBY (587) v, p. 173.
- Naranga semiochrea*, *albicincta caustipennis*, India, HAMPSON, p. 447, J. Bombay Soc. xi, n. spp.
- Nephelina*, n. n. for *Erebus*, Guérin, KIRBY (587) v, p. 130.
- Noctua esquina*, Ecuador, DOGNIN, p. 29, Ann. Soc. ent. Belgique, xli, n. sp.
- Nonagria geminipuncta*, eggs, LECHNER, pl. vii, figg. 5 & 6, pp. 153 & 154, Tijdschr. Ent. xl.
- Noropsis elegans*, synonymy, GROTE, p. 31, J. N. York Ent. Soc. v.
- Nudifrons*, n. g., near *Heliothis*, for *N. delicata*, n. sp., Palestine, pl. iv, fig. 24, STAUDINGER, p. 291, Deutsche ent. Zeitschr. Lep. x.
- Oligia insipida*, Ecuador, DOGNIN, p. 409, Ann. Soc. ent. Belgique, xli, n. sp.
- Omorphina aurantiaca*, figure, pl. i, fig. 2, ALPHÉRAKY, Romanoff Mem. ix.
- Ophisma varians*, Africa, MABILLE, p. 225, Ann. Soc. ent. France, 1897, n. sp.
- Ophyx ochroptera* = (*Thermesia tenebrica*, Luc.), LOWER, p. 30, P. Linn. Soc. N. S. Wales, xxii.
- Orrhodia acutula*, var. n. *scortea*, pl. ix, fig. 17, p. 288, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
- Orthosia horologa*, Australia, MEYRICK, p. 367, Tr. ent. Soc. London, 1897; *O. margarita*, New Zealand, HAWTHORNE, p. 282, Tr. N. Zealand Inst. xxix : n. spp.
- Oruza tritonina*, India, HAMPSON, p. 450, J. Bombay Soc. xi, n. sp.
- Pachylepis albilineata*, India, HAMPSON, p. 448, J. Bombay Soc. xi, n. sp.
- Palpangula fricta*, figure, pl. viii, fig. 7, ALPHÉRAKY, Romanoff Mem. ix.
- Parauchmis*, n. g., *Leucaniidæ*, for *P. smithii*, n. sp., E. Africa, HOLLAND (1028), p. 414, pl. fig. 2.
- Periagma profesta*, var. n. *sacra*, STAUDINGER, p. 298, Deutsche ent. Zeitschr. Lep. x.
- Perigea tertulia*, p. 27, *carcoma*, p. 28, Ecuador, DOGNIN, Ann. Soc. ent. Belgique, xli, n. spp.
- Perigea mustia*, p. 411, *albigeroides*, p. 412, Ecuador, DOGNIN, t. c., n. spp.
- Platagrotis speciosa*, var. n. *ægrotæ*, ALPHÉRAKY, p. 211, Romanoff Mem. ix.
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- Pleocoptera trimaculata*, India, HAMPSON, p. 456, J. Bombay Soc. xi, n. sp.
- Plotheia elongata*, India, HAMPSON, p. 451, t. c., n. sp.
- Polia kalchbergi*, Syria, STAUDINGER, p. 172, pl. iv, fig. 10, Deutsche ent. Zeitschr. Lep. x; *P. juditha*, p. 276, pl. iv, fig. 16, *anceps*, fig. 17, p. 277, *apora*, p. 280, *P. (Epundu?) lea*, fig. 18, p. 280, *P. ? johanna*, fig. 19, p. 281, Palestine, STAUDINGER, Deutsche ent. Zeitschr. Lep. x : n. spp.

- Polydesma smithii*, E. Africa, HOLLAND (1028), p. 416, pl., fig. 6; *P. leprosa*, India, HAMPSON, p. 455, J. Bombay Soc. xi : n. spp.
- Porosagrotis*, distinctions, SMITH, p. 58, Canad. Ent. xxix.
- Praxia macropa*, N. S. Wales, LOWER, p. 16, P. Linn. Soc. N. S. Wales, xxii; *P. marmarinopa*, W. Australia, MEYRICK, p. 372, Tr. ent. Soc. London, 1897 : n. spp.
- Prionophora*, recharacterised, MEYRICK, p. 374, t. c.
- P. grammatisia*, Queensland, *id.* l. c., n. sp.
- Prorocopsis*, n. g., *Plusiades*, for *P. melanochora*, n. sp., W. Australia, MEYRICK, p. 373, t. c.
- Pseudohadena pugnaz*, figure, ALPHÉRAKY, pl. ii, fig. 10, Romanoff Mem. ix.
- Pseudophia gentilis*, Palestine, STAUDINGER, p. 300, pl. ix, fig. 21, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Raddea digna*, figure, ALPHÉRAKY, pl. iii, fig. 5, Romanoff Mem. ix.
- Raparna ferrilineata stigmatilis*, India, HAMPSON, p. 461, J. Bombay Soc. xi, n. spp.
- Remigia crinigera*, Gilolo, SWINHOE, p. 168, Ann. Nat. Hist. xix, n. sp.
- Renodes moha*, Ecuador, DOGNIN, p. 247, Ann. Soc. ent. Belgique, xli, n. sp.
- Rhabdophora*, n. g., near *Euclidia*, for *R. messæ*, n. sp., Palestine, pl. ix, fig. 18, STAUDINGER, p. 296, Deutsche ent. Zeitschr. Lep. x.
- Risoba diphtheroides*, India, HAMPSON, p. 453, J. Bombay Soc. xi, n. sp.
- Rivula acygonia*, *barbipennis*, pl. A, fig. 3, India, HAMPSON, t. c., n. spp.
- Sadarsa arcuata*, India, etc., HAMPSON, p. 454, pl. A, fig. 19, J. Bombay Soc. xi, n. sp.
- Scotochrosta fissilis*, figure, pl. viii, fig. 9, ALPHÉRAKY, Romanoff Mem. ix.
- Seyetia palestiniensis*, figure, pl. ix, fig. 16, p. 285, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
- Sesamia nonagrioides*, in Réunion, GIARD, p. 30, Bull. Soc. ent. France, 1897. *S. nonagrioides*, in the Mascarene islands, BORDAGE, p. 11, C.R. Ac. Paris, cxv. *S. nonagrioides*, larval habits, generations, KÜNCHEL (644).
- Spinipalpa maculata*, figure, pl. i, fig. 1, ALPHÉRAKY, Romanoff Mem. ix.
- Stictoptera cerea*, Gilolo, SWINHOE, p. 167, Ann. Nat. Hist. xix, n. sp.
- Sympistis sibirica*, figure, ALPHÉRAKY, pl. x, fig. 11, Romanoff Mem. ix.
- Tapinostola phragmitidis*, eggs, LECHNER, p. 154, pl. 7, figg. 1-3, Tijdschr. Ent. xl.
- Tathodelta ustata*, India, HAMPSON, p. 448, J. Bombay Soc. xi, n. sp.
- Thalerastriu*, n. g. for *Erastria diaphora*, Stgr. and *bipartita*, Stgr., STAUDINGER, p. 294, Deutsche ent. Zeitschr. Lep. x.
- Thalpochares siticulosa*, var. n. *albina*, STAUDINGER, p. 293, pl. iv, fig. 25, Deutsche ent. Zeitschr. Lep. x.
- T. permixta*, Algeria, p. 266, pl. iv, fig. 7, STAUDINGER, t. c., n. sp.
- Thermesia nigripalpis*, India, HAMPSON, p. 456, J. Bombay Soc. xi, n. sp.
- Thyas*; to be used instead of *Achea* and *Ophiodes*, MEYRICK, p. 372, Tr. ent. Soc. London, 1897.
- T. irioleuca*, Queensland, *id.* t. c., p. 373, n. sp.
- Thyatira undulans*, India, HAMPSON, p. 283, J. Bombay Soc. xi; *T. opulescens*, China, ALPHÉRAKY, p. 135, pl. ix, fig. 7, Romanoff Mem. ix; *T. rectungulata*, Brooklyn, OTTOLENGUI, p. 25, pl. ii, Ent. News Philad. 1897 : n. spp.
- Trigonophora grumi*, figure, ALPHÉRAKY, pl. i, fig. 8, Romanoff Mem. ix.
- Trisuloides glauca*, India, HAMPSON, p. 455, J. Bombay Soc. xi, n. sp.
- Ulochlena superba*, figure, pl. i, fig. 7, ALPHÉRAKY, Romanoff Mem. ix.
- Valeria malezieuxi*, Ecuador, DOGNIN, p. 413, Ann. Soc. ent. Belgique, xli, n. sp.
- Xanthoptera fusciterminata*, *fissistigma*, India, HAMPSON, p. 446, J. Bombay Soc. xi, n. spp.



- Xenopseustis*, n. g., p. 369, *Caradrinides*, for *X. pæciliastis*, n. sp., Queensland, p. 370, MEYRICK, Tr. ent. Soc. London, 1897.
- Zethes lahera*, Singapore, SWINHOE, p. 169, Ann. Nat. Hist. xix; *Z. pallidicosta*, *albistigma discosticta*, p. 457, *lepraota*, p. 458, *viridicincta pectinifer*, pl. A, fig. 21, p. 459, India, HAMPSON, J. Bombay Soc. xi: n. spp.
- Zurobata albiscripta*, p. 449, India, *ustula*, Ceylon, etc., p. 450, HAMPSON, J. Bombay Soc. xi, n. spp.

## GEOMETRIDÆ, EPIPLEMIDÆ.

(For *Uranidæ* see *Bombyces*.)

[The titles indicated by the following names and numbers refer to *Geometridæ* and *Epiplemidæ*, viz.:—ALPHÉRAKY (16–19), BASTELBERGER (56), DOGNIN (258, 259), GROTE (437), HOLLAND (1028), KALCHBERG (561), KERSHAW (571), KIRBY (587), KNAUTH (599), LEECH (664), LOWER (691, 692, 693), MABILLE (701), MEYRICK (748, 749), OBERTHÜR (797), PAGENSTECHER (817), PEYRON (835, 836), PÜNGELER (884), ROTHSCHILD (948, 949), SCHAUS (963), STAUDINGER (1050, 1053, 1054), SWINHOE (1067), THIERRY-MIEG (1078), TUTT (1106), WARREN (1149–1152).]

The wing-nervures of *Geometridæ*, GROTE, Illustr. Wochenschr. pp. 405 & 593.

The *Geometridæ* of Amurland contains many notes of characters, varieties, and dates, STAUDINGER, Deutsche ent. Zeitschr. Lep. x, pp. 1–122, pls. i–iii.

*Hybrid Geometridæ*, see *Biston*.

*Abraxas marginata*, var. n. *mediofasciata*, HÖFNER, p. 168, Jahrb. Mus. Karnten, xxiv. *A. picaria*, var. n. *tortuosaria*, *grisearia*, *nebularia*, LEECH, p. 446, Ann. Nat. Hist. xix. *A. sylvata*, var., TUTT, p. xlix, P. ent. Soc. London, 1897.

*A. punctisignaria*, pl. vii, fig. 13, p. 447, *flavobasalis*, *punctaria*, p. 448, *reticularia*, *curvilinearis*, fig. 12, p. 449, China, LEECH, Ann. Nat. Hist. xix; *A. semitursipis*, China, WARREN, p. 396, Nov. Zool. iv; *A. discata*, Pulo Laut, p. 86, *invasata*, Borneo, *moniliata*, Celebes, *pleniguttata*, Luzon, p. 87, WARREN, t. c.: n. spp.

*Acadra fulvisparsa*, Niger, WARREN, p. 104, Nov. Zool. iv, n. sp.

*Acidalia divisaria*, figure, ALPHÉRAKY, pl. vii, fig. 10, Romanoff Mem. ix; *A. niveata*, pl. xx, fig. 12, PAGENSTECHER, Abh. Senckenb. Ges. xxiii.

*A. detritaria*, Syria, STAUDINGER, p. 180, pl. iv, fig. 14, Deutsche ent. Zeitschr. Lep. x; *A. consecrata*, pl. iv, fig. 29, p. 305, *improbata*, fig. 30, p. 307, *A. ? uniformis*, fig. 33, p. 308, *A. allongata*, fig. 33, p. 308, *flaccata*, pl. ix, fig. 22, p. 309, Palestine, STAUDINGER, t. c.; *A. saluberraria*, pl. i, fig. 5, p. 13, *amanaria*, fig. 9, p. 14, *crinitaria*, fig. 11, p. 17, *A. ? muscularia*, fig. 13, p. 18, Amurland, STAUDINGER, t. c.; *A. propinquaria*, *acutaria*, China, *satsumaria*, Japan, p. 91, *bimacularia*, p. 92, *rivularia*, *proximaria*, p. 93, *modicaria*, *falsaria*, p. 94, *arenaria*, p. 95, *nivearia*, *majoraria*, Japan, p. 96, *sedataria*, China, p. 97, *pulveraria*, Japan, p. 98, *marcidaria*, *lutearia*, p. 99, *mendicaria*, *centrofasciaria*, *farinaria*, p. 100, China, *gnophosaria*, Tibet, *infuscaria*, China and Japan, p. 101, *obfuscaria*, *tectaria*, China, *cineraria*, China and Japan, p. 102, *promiscuaria* (*Eois*), p. 105, Korea, *obtectaria*, Japan, p. 106, LEECH, Ann. Nat. Hist. xx: n. spp.

*Acidalina*, n. g. for *A. decolor*, n. sp., Algeria, pl. iv, fig. 5, STAUDINGER, p. 269, Deutsche ent. Zeitschr. Lep. x.

*Acrosemia ochrolaria*, Jalapa, SCHAUS, p. 163, J. N. York Ent. Soc. v; *A. undilinea*, Costa Rica, WARREN, p. 486, Nov. Zool. iv, n. spp.

- Acrotomodes nigripuncta*, Venezuela, WARREN, p. 486, Nov. Zool. iv, n. sp.  
*Actenochroma ochrea*, referred to *Hypochroma*, WARREN, p. 207, t. c.  
*Adeixis*, n. g., *Enochrominæ*, for *A. insignata*, n. sp., Australia, WARREN, p. 27, t. c.  
*Eitheolepis papillosa*, ♀, WARREN, p. 68, t. c.  
*Agathia confusata*, Sierra Leone, WARREN, p. 32, Nov. Zool. iv; *A. obsoleta*, Java, WARREN, p. 208, pl. v, fig. 4, t. c.; *A. succedanea*, Borneo, WARREN, p. 388, t. c. : n. spp.  
*Agnibesa venusta*, Sikkim, WARREN, p. 65, t. c., n. sp.  
*Agraptoclora nigricornis*, Mombasa island, WARREN, p. 208, pl. v, fig. 14, t. c., n. sp.  
*Agraptoclora modesta*, p. 32, *rubriplaga*, p. 33, S. Africa, WARREN, t. c., n. spp.  
*Alcis contortilinea*, pl. v, fig. 16, p. 245, Congo, *faustinata*, China, p. 246, WARREN, t. c., n. spp.  
*Allaxitheca*, n. g., *Deiliniinæ*, type, *purpurascens*, Moore, WARREN, p. 237, t. c.  
*Almodes subrufa*, Jamaica, WARREN, p. 417, t. c., n. sp.  
*Amaurinia chrysocraspedata*, p. 446, *consocia*, *xanthopterata*, p. 447, Bolivia, WARREN, t. c., n. spp.  
*Amphidasis strataria*, var. n. *breigneti*, BRASCASSAT, p. lxxvii, C.R. Soc. Bordeaux, 1897.  
*Amygdalopteryx*, n. g., type *Larentia dulciferata*, Wlk., WARREN, p. 451, Nov. Zool. iv.  
*Anaitis paludata*, variation and distribution, SOMMER, pp. 253-262, Deutsche ent. Zeitschr. Lep. x. *A. plagiata*, var. SCHOPFER, p. 158, Deutsche ent. Zeitschr. Lep. x.  
*A. brunnearia*, China, LEECH, p. 553, Ann. Nat. Hist. xix, n. sp.  
*Anisephyra aurata*, Celebes, WARREN, p. 47, Nov. Zool. iv, n. sp.  
*Anisodes laudanata*, W. Africa, MABILLE, p. 227, Ann. Soc. ent. France, 1897; *A. superflua*, Venezuela, WARREN, p. 431, Nov. Zool. iv; *A. calavera*, Ecuador, DOGNIN, p. 31, Ann. Soc. ent. Belgique, xli : n. spp.  
*Anisogamia albilauta*, New Guinea, *albimacula*, p. 33, *curvigutta*, *dentata*, *moniliata*, p. 34, Queensland, *muscosa*, Fergusson island, *nigrimaculata*, New Guinea, *undilinea*, Queensland, p. 35, WARREN, Nov. Zool. iv, n. spp.  
*Anisogonia deusta*, n. varr., WARREN, p. 486, t. c.  
*Anisographie*, n. g., *Ennominæ*, for *A. dissimilis*, pl. v, figg. 1 & 2, n. spp., Queensland, WARREN, t. c., p. 254.  
*Anisoperas subfulvata*, Costa Rica, WARREN, p. 487, t. c., n. sp.  
*Anisopteryx chaoticaria*, Centr. Asia, ALPHÉRAKY, p. 55, pl. ii, fig. 8, Romanoff Mem. ix, n. sp.  
*Anonychia diversilinea*, p. 101, *pallida*, p. 102, N. India, WARREN, Nov. Zool. iv; *A. latifasciaria*, p. 225, *præditaria*, p. 226, pl. vi, fig. 4, China, LEECH, Ann. Nat. Hist. xix : n. spp.  
*Anthypertyhra* ? *illitirata*, S. E. Africa, WARREN, p. 255, Nov. Zool. iv, n. sp.  
*Anthyria metriopis*, Pulo Laut, MEYRICK, p. 70, Tr. ent. Soc. London, 1897, n. sp.  
*Antitrygodes dentilinea*, Sierra Leone, WARREN, p. 47, Nov. Zool. iv, n. sp.  
*Apericallia*, n. g., near *Pericallia*, for *A. bilinearia*, n. sp., W. China, LEECH, p. 211, Ann. Nat. Hist. xix.  
*Aplochloa invisibilis*, Niger, WARREN, p. 76, Nov. Zool. iv, n. sp.  
*A. flavifimbria*, Colombia, *rufilineata*, Surinam, WARREN, p. 423, t. c.; *A. fringillata*, Parana, SCHAUS, p. 161, J. N. York Ent. Soc. v : n. spp.  
*Aplgompha*, n. g., *Palyadiniæ*, type *Fidonia lafayi*, Dogn., WARREN, p. 459, Nov. Zool. iv.

- Apostates*, n. g., *Sterrhinæ*, for *A. albiclathrata*, n. sp., Merv, WARREN, p. 214, t. c.
- Arcina*, systematic position, WARREN, p. 124, t. c.
- Arctoscelia*, n. g., *Selidoseminæ*, p. 102, for *A. onusta*, n. sp., Luzon, p. 103, WARREN, t. c.
- Argyrotome ferruginea*, p. 459, *tenebrosa*, p. 460, Bolivia, WARREN, t. c., n. spp.
- Arichanna interruptaria*, *similaria*, p. 434, *clavaria*, *diffusaria*, p. 435, *confusaria*, *fluvovenaria*, p. 437, *flavomaculata*, *undularia*, *lateraria*, p. 438, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Arycanda*, Wlk. = (*Panæthia*, Gn.), WARREN, p. 82, Nov. Zool. iv.
- Arycanda absorpta*, Borneo, p. 82, *dissecta*, Natuna islds., *omissa*, *subfumosa*, Borneo, p. 83, WARREN, t. c., n. spp.
- Asaphodes siris*, New Zealand, HAWTHORNE, p. 283, Tr. N. Zealand Inst. xxix, n. sp.
- Ascotis selenaria*, var. n. *fusciata*, WARREN, p. 92, Nov. Zool. iv.
- Aspilates tricolor*, Natal, WARREN, p. 99, t. c.; *A. candidata*, Parana, *plurilineata*, Bolivia, WARREN, p. 474, t. c. : n. spp.
- Aspilatopsis*, n. g., near *Hebdomophruda*, for *A. punctata*, n. sp., Natal, WARREN, p. 100, t. c.
- Aspilonaxa*, n. g., p. 386, near *Naxa*, for *A. lineata*, n. sp., China, p. 387, WARREN, t. c.
- Asthena ochrifasciaria*, Japan, p. 84, *conditaria*, *A. ? octomaculata*, China, p. 85, LEECH, Ann. Nat. Hist. xx, n. spp.
- Astrapephora romanovi*, figure, pl. iii, fig. 11, ALPHÉRAKY, Romanoff Mem. ix.
- Atyriodes crenulata*, Peru, WARREN, p. 419, Nov. Zool. iv, n. sp.
- Auophylla*, n. g., p. 423, *Geometrinæ*, for *A. multiplagiata*, n. sp., Paraguay, p. 424, WARREN, t. c.
- Auzeodes nigroseriata*, ♀, WARREN, p. 255, t. c.
- Azata flexilinea*, W. China, *luteiceps*, Celebes, WARREN, p. 251, t. c., n. spp.
- A. mutabilis*, Borneo, p. 104, *sororcula*, Zomba, p. 105, WARREN, t. c. : n. spp.
- Azelina paranaria*, *jonesaria*, Parana, SCHAUS, p. 162, J. N. York Ent. Soc. v; *A. constrictifascia*, Mapiri, p. 487, *infantilis*, Onoribo, *maculicosta*, Colombia, WARREN, p. 488, t. c. : n. spp.
- Azelinopsis brunnea*, Niger, WARREN, p. 115, t. c., n. sp.
- Bapta candidaria*, Japan, *nigropunctaria*, China, LEECH, p. 198, Ann. Nat. Hist. xix; *B. longipennis*, Khasia hills, WARREN, p. 237, Nov. Zool. iv; *B. argentea*, Jamaica, *hebetior*, Parana, *nubimargo*, Bolivia, WARREN, p. 462, t. c. : n. spp.
- Baptia nigrilinearia*, China, LEECH, p. 89, Ann. Nat. Hist. xx, n. sp.
- Barrama*, n. g., *Orthostixinæ*, near *Rambara*, for *B. impunctata*, n. sp., Natal, WARREN, p. 28, Nov. Zool. iv.
- Biston hünni*, hybrid of *pomonarius*, ♂ and *hirtarius*; *B. pilzii*, Gub., figures; heredity; C. OBERTHÜR, pp. 256–259, Bull. Soc. ent. France, 1897. *B. betularius*, var. n. *fumosarius*, ALPHÉRAKY, p. 140, Romanoff Mem. ix. *B. robustum*, var. n. *parva*, p. 323, *B. invenustaria*, var. n. *sinicaria*, p. 324, LEECH, Ann. Nat. Hist. xix.
- B. emarginaria*, p. 322, pl. vii, fig. 8, *serratilinearia*, p. 323, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Boarmia fortunata*, var. *buchlei*, KILIAN, p. 41, Soc. ent. xii. *B. conjungens*, figure, ALPHÉRAKY, pl. iv, fig. 4, Romanoff Mem. ix. *B. plumigeraria*, sexes, larva, COQUILLET, p. 64, Bull. Dep. Agric. Ent. vii. *B. cinctaria*, larva, BROWN, C.R. Soc. Bordeaux, 1896, p. xliii.
- B. sidemiata*, pl. ii, fig. 35, p. 51, *dissimilis*, fig. 36, p. 52, *amenaria*, pl. iii, fig. 38, p. 56, Amurland, STAUDINGER, Deutsche ent. Zeitschr. Lep. x; *B. leptoptera*, China, ALPHÉRAKY, p. 141, pl. x, fig. 4, Romanoff Mem.

- ix; *B. koreana*, Korea, ALPHÉRAKY, p. 180, t. c.; *B. farracearia* with var. *fuliginaria*, p. 340, *nigrilinearia*, *lenticularia*, p. 341, *recurvaria*, *decoraria*, p. 342, *tripartaria*, China, *opertaria*, Japan, p. 342, *tristaria*, *conjunctaria*, p. 344, *dilectaria*, p. 345, *columbinaria*, p. 348, China, LEECH, Ann. Nat. Hist. xix; *B. jejuna*, p. 416, *montanaria*, p. 418, *corticaria*, p. 419, *stolidaria*, China, *majuscularia*, *pryeraria*, Japan, p. 420, *sinicaria*, p. 421, *subochrearia*, *bilinearia*, *punctimarginaria*, p. 422, *B. ? nigrofasciaria*, *B. divisaria*, p. 423, *decoloraria*, p. 424, pl. vii, fig. 4, *approximaria*, *dolosaria*, *incongruaria*, p. 425, *punctilignearia*, *olivacearia*, p. 426, *projectaria*, *mirandaria*, p. 427, *insolitaria*, *moupinaria*, *flavimaculata*, p. 428, China, LEECH, Ann. Nat. Hist. xix; *B. caritaria*, Peru, *orizabaria*, Mexico, *dukinfeldia*, Parana, p. 164, *sapulena*, Petropolis, *luciararia*, W. Indies, *astecaria*, Mexico, *francia*, Parana, p. 165, *nebularia*, S. Brazil, p. 166, SCHAUS, J. N. York Ent. Soc. v : n. spp.
- Bociraza reversa*, Obi, WARREN, p. 28, Nov. Zool. iv, n. sp.
- Bordeta longimacula*, Palawan, WARREN, p. 83, t. c., n. sp.
- Brabira plicataria*, China, LEECH, p. 72, Ann. Nat. Hist. xx, n. sp.
- Brachycola*, n. g. for pt. of *Anisodes*, with *B. niveopuncta*, Australia, *B. ? minorata*, Tenimber, n. spp., WARREN, p. 48, Nov. Zool. iv : *B. decolorata*, Lifu, *flavareata*, Penang, p. 215, *B. ? inornata*, Banda islds., *samoana*, Apia, p. 216, WARREN, t. c., n. spp.
- Brachyprota*, n. g., *Sterrhina*, for *B. abnormipennis*, n. sp., Surinam, WARREN, p. 432, t. c.
- Bryoptera ? ustifumosa*, Paraguay, WARREN, p. 466, t. c., n. sp.
- Bursada alboguttata*, description, figure, PAGENSTECHER, p. 457, pl. xviii, fig. 9, Abh. Senckenb. Ges. xxiii.
- B. adaucta*, Celebes, *B. ? puncticarpus*, pl. v, fig. 18, Centr. Africa, p. 240, *B. rotundimacula*, fig. 26, Luzon, p. 241, WARREN, Nov. Zool. iv; *B. septemnotata*, Borneo, *trispilata*, New Guinea, WARREN, p. 84, t. c. : n. spp.
- Buzura nephelistis*, Talaut, MEYRICK, p. 77, Tr. ent. Soc. London, 1897; *B. analiplaga*, Niger, *annulata*, Bali, *atomaria*, Celebes, WARREN, p. 244, Nov. Zool. iv : n. spp.
- Bylazora nigropunctaria*, China, LEECH, p. 333, Ann. Nat. Hist. xix, n. sp.
- Caberodes russulata*, p. 226, *hemigrammata*, p. 227, Comoro islds., MABILLE, Ann. Soc. ent. France, 1897, n. spp.
- Calichodes foveata*, Penang, WARREN, p. 246, Nov. Zool. iv, n. sp.
- Cambogia conspicuaria*, China, LEECH, p. 88, Ann. Nat. Hist. xx; *C. aurata*, Surinam, *ferruginata*, Jamaica, p. 447, *lineolata*, Colombia, *nigriplaga*, Parana, *C. ? semipicta*, Petropolis, p. 448, *tessellata*, Jamaica, p. 449, WARREN, Nov. Zool. iv : n. spp.
- Camptogramma monacmaria*, W. Africa, p. 229, *polyacmaria*, W. Africa and Mayotte isld., p. 230, MABILLE, Ann. Soc. ent. France, 1897; *C. constellata*, Mauritius, WARREN, p. 233, Nov. Zool. iv; *C. erebata*, Parana, WARREN, p. 451, t. c. : n. spp.
- Canonistis*, n. g., *Monocteniade*, for *rectilineata*, Gn., MEYRICK, p. 74, Tr. ent. Soc. London, 1897.
- Capnophylla*, n. g., *Epiplemidæ*, near *Gathynia*, p. 410, for *C. albiceps*, n. sp., Brazil, p. 411, WARREN, Nov. Zool. iv.
- Carbia*, characters, MEYRICK, p. 69, Tr. ent. Soc. London, 1897.
- Carige flavidaria*, China, LEECH, p. 552, Ann. Nat. Hist. xix, n. sp.
- Cartaletis flexilimes*, Niger, WARREN, p. 28, Nov. Zool. iv, n. sp.
- Catascia ? pulverulenta*, Borneo, WARREN, p. 250, t. c., n. sp.
- Catapilates*, n. g., near *Aspilates*, for *C. griseosens*, Bogota, *C. ? arenosa*, São Paulo, n. spp., WARREN, p. 474, t. c.
- Cautoloma oberthuri*, figure, ALPHÉRAKY, p. 143, Romanoff Mem. ix, n. sp.

- Cenoctenucha*, n. g., near *Odontopera*, type *similaria*, Moore with *C. imitata*, n. sp., Khasia hills, WARREN, p. 115, Nov. Zool. iv.
- Ceranchia ansorgei*, Uganda, ROTHSCHILD, p. 309, pl. vii, fig. 5, t. c., n. sp.
- Certima unilineata*, Bolivia, WARREN, p. 418, t. c., n. sp.
- Cheimatobia brumata*, *boreata*, distinctions, life-histories, PEYRON, pp. 81-94, pl. ii, Ent. Tidskr. 1897.
- Chiasmia radiata*, Khasia hills, WARREN, p. 82, Nov. Zool. iv, n. sp.
- Chloroclystis grisea*, Mombasa isld., *minima*, Queensland, WARREN, p. 227, t. c.; *C. aristias*, New Zealand, MEYRICK, p. 385, Tr. ent. Soc. London, 1897; *C. brunneoviridis*, São Paulo, WARREN, p. 449, Nov. Zool. iv : n. spp.
- Chloroglyphica maculata*, p. 208, pl. v, fig. 23, *aureofulva*, fig. 20, p. 209, Khasia hills, WARREN, t. c., n. spp.
- Chloromachia divapala rufimargo*, subsp. n., WARREN, p. 209, t. c.
- Chloromma persimilis*, Niger, WARREN, p. 36, t. c., n. sp.
- Chloroplintha*, n. g., near *Chloroclystis*, for *C. velutina*, n. sp., Celebes, WARREN, p. 69, t. c.
- Chlorostrota*, n. g., *Geometrinæ*, for *C. marginata*, Niger, p. 36, *præampla*, Khasia hills, p. 37, n. spp., WARREN, t. c.; *C. discata*, Borneo, WARREN, p. 389, t. c., n. sp.
- Chogada betularia*, S. Africa, WARREN, p. 93, t. c.; *C. lacteata*, New Britain, *marmorata*, Mauritius, WARREN, p. 247, t. c. : n. spp.
- Chorodnodes*, n. g., *Semiothisinæ*, for *C. rothi*, n. sp., Niger, WARREN, p. 106, t. c.
- Christophia*, n. g. for *Abraxas festinaria*, Christ., fig. pl. i, fig. 17, STAUDINGER, p. 25, Deutsche ent. Zeitschr. Lep. x.
- Chrysocraspeda marginata*, Khasia hills, WARREN, p. 392, Nov. Zool. iv; *C. proximaria*, Moupin, LEECH, p. 106, Ann. Nat. Hist. xx; *C. orgalea*, Pulo Laut, MEYRICK, p. 71, Tr. ent. Soc. London, 1897; *C. aurimargo*, Cooktown, WARREN, p. 216, Nov. Zool. iv : n. spp.
- Chrysolene*, n. g., near *Chrysocraspeda*, type *Hyria devitaria*, Wlk. with *C. cruraria*, Cooktown, *dilucida*, Borneo, n. spp., WARREN, p. 49, t. c.
- Cidaria oxybiaria*, var. n. *pseudogaliata*, pl. iv, fig. 38, STAUDINGER, p. 317, Deutsche ent. Zeitschr. Lep. x. *C. lugubrata*, var. n. *albidior*, ALPHÉRAKY, p. 344, Romanoff Mem. ix. *C. picata*, habits, GAUCKLER, p. 394, Deutsche ent. Zeitschr. Lep. x. *C. reticulata*, habits, MOSS, p. 99, Ent. Mag. xxxiii.
- C. multipunctata*, Palestine, STAUDINGER, p. 316, Deutsche ent. Zeitschr. Lep. x; *C. minimata*, p. 86, pl. iii, fig. 53, *ablegata*, fig. 60, p. 96, *nymphæata*, fig. 61, p. 99, *musculata*, pl. iv, fig. 3, *parvulata*, pl. iii, fig. 62, p. 100, *tenera*, fig. 64, p. 102, *evanescens*, fig. 66, p. 104, Amurland, STAUDINGER, t. c.; *C. viperata*, p. 72, *interrogata*, p. 80, Centr. Asia, ALPHÉRAKY, Romanoff Mem. ix; *C. proserpina*, Korea, ALPHÉRAKY, p. 183, pl. x, fig. 5, t. c.; *C. ? lamae*, China, ALPHÉRAKY, p. 145, t. c.; *C. fulgidaria*, p. 641, *albipunctaria*, p. 642, *ochracearia*, p. 643, *latifasciaria*, p. 644, *postalbaria*, p. 645, *fervidaria*, p. 646, *subochraria*, p. 647, *literataria*, p. 648, *fumataria*, *bipartaria*, p. 649, *fasciaria*, p. 650, China, *erectaria*, p. 651, *angularia*, p. 652, Japan, *aridaria*, *ambustaria*, p. 653, China, *nigrozonaria*, Japan, p. 654, *fuscaria*, China, p. 655, LEECH, Ann. Nat. Hist. xix : n. spp.
- Cimicodes subapicata*, Bolivia, WARREN, p. 489, Nov. Zool. iv, n. sp.
- Cithæcia*, n. g. for *C. macrocheila*, n. sp., Amurland, pl. iii, fig. 79, STAUDINGER, p. 121, Deutsche ent. Zeitschr. Lep. x.
- Cleora fulvincta*, La Plata, WARREN, p. 466, Nov. Zool. iv, n. sp.
- Clepsimelea*, n. g., p. 261, *Protopolophinæ*, for *C. phryganeoides*, n. sp., New Guinea, pl. v, fig. 22, p. 262, WARREN, t. c.
- Calura*, n. g., *Epiplemidæ*, for *C. transversata*, n. sp., Rio de Janeiro, and including *Erosia omana*, Druce, WARREN, p. 411, t. c.

- Collesis*, n. g., near *Euchloris*, for *C. mimica*, n. sp., Zambesi, pp. 37 & 210, WARREN, t. c.
- Comibæna subscripta*, Venezuela, WARREN, p. 424, t. c., n. sp.
- Comostola pallidaria*, Parana, SCHAUS, p. 161, J. N. York Ent. Soc. v, n. sp.
- Comostolodes consobrina*, Cooktown, WARREN, p. 210, Nov. Zool. iv, n. sp.
- Conchocometa javensis*, Bandong, WARREN, p. 216, t. c., n. sp.
- Conchyliia smithii*, E. Africa, HOLLAND (1028), p. 419, pl. fig. 12, n. sp.
- Cophophlebia*, n. g., *Ennominae*, for *C. olivata*, n. sp., Zomba, WARREN, p. 116, Nov. Zool. iv.
- Corymica immaculata*, Sikkim, WARREN, p. 116, t. c., n. sp.
- Cosmogonia*, n. g. for *Thalerura decorata*, WART., WARREN, p. 210, t. c.
- Cosymbia unocula*, E. Africa, WARREN, p. 217, t. c., n. sp.
- Craspedia abornata*, n. var., WARREN, p. 432, Nov. Zool. iv.
- C. aggravata*, Khasia hills, *bigeminata*, *bonaventura*, S. Africa, p. 50, *castissima*, Cooktown, *deserta*, *dissonans*, p. 51, S. Africa, *lævipennis*, W. Africa, *nigrinotata*, Zomba, *melliflua*, p. 52, *sanguinisecta*, Natal, *subperlaria*, *sufficiens*, W. Africa, p. 53, WARREN, t. c.; *C. acentra*, S. Africa, *atridiscata*, Khasia hills, p. 217, *discata*, Solomon islands, *furfurata*, Simla, *ossicolor*, Sierra Leone, *pallidilinea*, Java, p. 218, *sagittilinea*, Mombasa isld., *uninotata*, Sierra Leone, p. 219, WARREN, t. c.; *C. densicornis*, Sumba, p. 392, *dohertyi*, Celebes, p. 393, WARREN, t. c.; *C. albidulata*, São Paulo, p. 432, *ambagifera*, Venezuela, *atomaria*, Jamaica, *deiliniata*, p. 433, *infota*, *radiata*, Bolivia, *sticticata*, Paraguay, p. 434, WARREN, t. c. : n. spp.
- Craspedosis albigutta*, New Guinea, WARREN, p. 241, t. c., n. sp.
- Crocallis? jordanaria*, Palestine, STAUDINGER, p. 310, pl. iv, fig. 37, Deutsche ent. Zeitschr. Lep. x; *C. acutaria*, p. 221, *C.? acuminaria*, p. 222, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Crocinis atricostaria*, Madagascar, MABILLE, p. 229, Ann. Soc. ent. France, 1897, n. sp.
- Crocota? punctaria*, Tibet, LEECH, p. 319, Ann. Nat. Hist. xix, n. sp.
- Cryptoloba olivaria*, Shillong, SWINHÖE, p. 165, Ann. Nat. Hist. xix; *C. rivularia*, China, LEECH, p. 550, Ann. Nat. Hist. xix : n. spp.
- Cusiala malescripta*, Celebes, WARREN, p. 90, Nov. Zool. iv, n. sp.
- Cyclonia costipuncta*, Venezuela, p. 489, *jaspidea*, Jamaica, p. 490, WARREN, t. c., n. spp.
- Cyllopoda angusta*, Bolivia, *hypocyanea*, Colombia, p. 419, *latimargo*, Demerara, *obtusimacula*, Loja, *semidivisa*, Parana, p. 420, WARREN, t. c., n. spp.
- Cymatophoru mutabilis*, Jamaica, WARREN, p. 466, Nov. Zool. iv, n. sp.
- Dalima gigantea*, India, SWINHÖE, p. 166, Ann. Nat. Hist. xix; *D. variaria*, p. 215, *obliquaria*, p. 216, *ochrearia*, *acutaria*, p. 217, *columbinaria*, p. 218, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Darisa differens*, China, WARREN, p. 398, Nov. Zool. iv; *D.? dissimilis*, Mauritius, pl. v, figg. 17, 19, p. 247, WARREN, t. c. : n. spp.
- Decetia numicuararia*, var. n. *sinelinea*, WARREN, p. 24, Nov. Zool. iv.
- D. violacearia*, China, *argentinelinearia*, Yesso, p. 183, *lilacinaria*, China, p. 184, LEECH, Ann. Nat. Hist. xix, n. spp.
- Decetiodes*, n. g., *Epiplemidæ*, for *D. fallax*, n. sp., Venezuela, WARREN, p. 412, Nov. Zool. iv.
- Dectochilus brunnea*, Chili, WARREN, p. 490, t. c., n. sp.
- Deilinia chlorochroa*, Pulo Laut, MEYRICK, p. 78, Tr. ent. Soc. London, 1897; *D. sericea*, Bogota, WARREN, p. 462, Nov. Zool. iv : n. spp.
- Derrera discata*, New Guinea, WARREN, p. 206, Nov. Zool. iv, n. sp.
- Diastictis inceptaria*, early stages, SLINGERLAND, p. 49, pl. iii, Canad. Ent. xxix.
- D. microdora*, Pulo Laut, MEYRICK, p. 75, Tr. ent. Soc. London, 1897, n. sp.

- Dichromatopodia argentipuncta, olivaceonotata*, Venezuela, WARREN, p. 435, Nov. Zool. iv, n. spp.
- Dierna? timandra*, Korea, ALPHÉRAKY, p. 179, pl. xi, fig. 7, Romanoff Mem. ix, n. sp.
- Dilinia conspersaria*, Japan, p. 315, *rufofasciaria*, China, p. 316, LEECH, Ann. Nat. Hist. xix, n. spp.
- Dilophodes conspicuaria*, Japan, LEECH, p. 454, Ann. Nat. Hist. xix, n. sp.
- Diplodesma olivata*, Sandakan, WARREN, p. 389, Nov. Zool. iv, n. sp.
- Diplurodes indentata*, Borneo, WARREN, p. 93, t. c., n. sp.
- Dirades acutilinea, columbaris*, Penang, p. 384, *lactea*, S. Africa, p. 385, WARREN, t. c.; *D. exangulata*, Borneo, *integra*, Lombok, p. 200, *pygmeata*, Batchian, p. 201, WARREN, t. c. : n. spp.
- Discoreba simplex*, var. *punctaria*, LEECH, p. 319, Ann. Nat. Hist. xix.
- Docephora pilosa*, Costa Rica, WARREN, p. 449, Nov. Zool. iv, n. sp.
- Dryadopsis*, n. g., p. 424, type *Nemoria morbilliata*, Feld., WARREN, t. c.
- Dysephyra commaculata*, Demerara, p. 435, *lunifera*, Colombia, p. 436, WARREN, t. c., n. spp.
- Eariodes*, n. g., *Deiliniinae*, for *E. variomacula*, n. sp., Parana, WARREN, Nov. Zool. iv.
- Ectropis nigripunctata*, Niger, p. 93, *sabulosa*, Amboyna, pp. 94 & 248, WARREN, Nov. Zool. iv; *E. macariata*, Cooktown, p. 248, *E.? tenuis*, India, p. 249, WARREN, t. c.; *E. petras*, Pulo Laut, MEYRICK, p. 75, Tr. ent. Soc. London, 1897 : n. spp.
- Emmesomia* [*bilinearia*, altered, p. 110, op. cit. xx, to] *parallelaria*, China, LEECH, p. 546, Ann. Nat. Hist. xix, n. sp.
- Enconista exustaria*, Palestine, STAUDINGER, pl. iv, fig. 36, p. 315, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Endropia? hedemanni*, Amurland, STAUDINGER, pl. i, fig. 23, p. 33, t. c., n. sp.
- Eois exquisita*, Centr. Africa, pl. v, fig. 10, p. 219, *E.? perspersata*, Timor, p. 220, WARREN, Nov. Zool. iv; *E. alternifascia*, São Paulo, p. 436, *E.? cambogiata*, Brit. Guiana, *E. cruorata*, Venezuela, *quadrirubrata*, Petropolis, *rhodariata*, p. 437, *rubrisuffusa*, p. 438, Parana, WARREN, t. c.; *E. procrossa*, Sambawa, MEYRICK, p. 71, Tr. ent. Soc. London, 1897; *E. iodesma*, Brisbane, MEYRICK, p. 376, t. c. : n. spp.
- Ephoria*, n. g. for *Epione arenosa*, Butler, STAUDINGER, p. 66, Deutsche ent. Zeitschr. Lep. x.
- Ephoria xanthocolona*, Borneo, MEYRICK, p. 78, Tr. ent. Soc. London, 1897, n. sp.
- Ephyra pendulinaria*, metamorphoses, SCUDDER, p. 103, Psyche, viii.
- E. brunnearia*, China, LEECH, p. 107, Ann. Nat. Hist. xx, n. sp.
- Epicosymbia*, n. g., near *Cosymbia*, for *E. perrufa*, n. sp., Natal, WARREN, p. 54, Nov. Zool. iv.
- Epione cinerea*, Rio Jalapa, SCHAUS, p. 163, J. N. York Ent. Soc. v, n. sp.
- Epiplema instabilata*, var. n. *fuscata*, WARREN, p. 385, Nov. Zool. iv. *E. instabilata semifulva*, subsp. n., WARREN, p. 25, t. c. *E. himala*, var. n. *evanescens*, ALPHÉRAKY, p. 139, Romanoff Mem. ix.
- E. amygdalipennis*, Apia, p. 201, *delicatula*, Khasia hills, pl. v, fig. 7, *discata*, Celebes, *lugens*, Apia, p. 202, *nititans*, Malay penins., *rhombifera*, Timor, p. 203, *ruptifascia*, Bali, p. 204, WARREN, Nov. Zool. iv; *E. morataria*, p. 185, *nubifasciaria*, p. 186, China, LEECH, Ann. Nat. Hist. xix; *E. caesia*, *niveipuncta*, Manilla, p. 25, *paradeicta*, Celebes, p. 26, WARREN, Nov. Zool. iv; *E. albiocellata*, Onoribo, p. 412, *draco*, *intervenata*, Bolivia, p. 413, WARREN, t. c. : n. spp.
- Epipristis minimaria* = (*oxycyma*, Meyr.), LOWER, p. 30, P. Linn. Soc. N. S. Wales, xxii.
- Epirranthis obfirmaria*, life-history, FYLES, p. 258, Canad. Ent. xxix.

- Epirrhoe latigrisea*, Zomba, WARREN, p. 72, Nov. Zool. iv; *E. crepuscularia*, Mindoro, WARREN, p. 234, t. c. *E. ? gelatina*, Mapiri, WARREN, p. 452, t. c. : n. spp.
- Episothalma marginata, semigrisea*, W. Africa, WARREN, p. 38, Nov. Zool. iv, n. spp.
- Erielyces solilucia*, var. n. *subintrusa*, WARREN, p. 421, t. c., n. sp.
- Erosia sigillata*, Madagascar, MABILLE, p. 228, Ann. Soc. ent. France, 1897, n. sp.
- Erosina foingi*, Ecuador, DOGNIN, p. 30, Ann. Soc. ent. Belgique, xli, n. sp.
- Eubolia cinigeraria*, Centr. Asia, ALPHÉRAKY, p. 59, pl. ii, figg. 15 & 16, Romanoff Mem. ix; *E. similaria*, China, LEECH, p. 554, Ann. Nat. Hist. xix : n. spp.
- Eubrya crenulata*, Natal, p. 90, *grisea*, Zomba, *subpunctata, trisecta*, Natal WARREN, p. 91, Nov. Zool. iv, n. spp.
- Euchlena pyrotoca*, Talaut, MEYRICK, p. 79, Tr. ent. Soc. London, 1897, n. sp.
- Euchloris citrolimbaria* = (*Iodis illidgei*, Luc.), *E. metaspila* = (*I. eucalypti*, Luc.), *E. vertumnaria* = (*subalpina*, Luc.), LOWER, p. 29, P. Linn. Soc. N. S. Wales, xxii.
- E. ? viridifrons*, Ainu Daria, WARREN, p. 389, Nov. Zool. iv; *E. ochrea*, E. Africa, WARREN, p. 210, pl. v, fig. 21, t. c. *E. oleagina*, Natal, WARREN, p. 38, t. c.; *E. insolitaria*, p. 236, *argentataria, nigromacularia, ornataria*, p. 237, China, *obsoletaria*, Japan, p. 238, *incomptaria, simpliciararia, striataria*, p. 239, China, LEECH, Ann. Nat. Hist. xx; *E. (Iodis) hypoleucus*, Queensland, LOWER, p. 263, P. Linn. Soc. N. S. Wales, xxii : n. spp.
- Eucrotes rubridisca*, E. Africa, WARREN, p. 38, Nov. Zool. iv; *E. impunctata*, Mombasa Is., pl. v, fig. 15, *nanula*, Cooktown, WARREN, p. 211, t. c.; *E. ? pruinosa*, Palestine, STAUDINGER, p. 303, Deutsche ent. Zeitschr. Lep. x : n. spp.
- Eudule costata*, Brazil, WARREN, p. 456, Nov. Zool. iv, n. sp.
- Eudulophasia*, n. g., *Eudulina*, type *Ameria invaria*, Wlk., WARREN, p. 456, t. c.
- Euephyra albidiscata*, Costa Rica, WARREN, p. 438, t. c., n. sp.
- Eugnesia*, n. g., *Declinina*, p. 76, for *E. correspondens*, Luzon, *E. ? aurantiaca*, Queensland, p. 77, *E. sanguinata*, New Guinea, p. 78, n. spp., WARREN, t. c.
- E. intensa*, Celebes, WARREN, p. 396, t. c., n. sp.
- Eulygris*, n. g., p. 82, for *E. declinans*, n. sp., p. 81, pl. iii, fig. 52, Amurland, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
- Eulyte ? disparata*, Uganda, WARREN, p. 234, Nov. Zool. iv, n. sp.
- Eumelea ludovicata cupreata*, subsp. n., *E. sanguinata australiensis*, subsp. n., WARREN, p. 29, t. c.
- E. albinacula*, Obi, *semirosea*, Halmaheira, WARREN, p. 29, Nov. Zool. iv; *E. unilineata*, Borneo, WARREN, p. 387 : n. spp.
- Euomaea*, n. g., near *Prosoplopha*, for *E. unilineata*, n. sp., Zomba, WARREN, p. 124, Nov. Zool. iv.
- Euphia propinqua*, China, WARREN, p. 234, Nov. Zool. iv, n. sp.
- Eupithecia hyperboreata*, habits, distinctions, THURAU, Ent. Nachr. xxiii, pp. 145-147.
- E. carpophilata*, pl. iii, fig. 69, p. 108, *gigantea*, fig. 70, p. 109, *bohatschi*, fig. 73, p. 111, *suboxydata*, fig. 74, p. 112, *bella*, fig. 75, p. 115, *detritata*, fig. 77, p. 119, *subbreviata*, fig. 78, p. 120, Amurland, STAUDINGER, Deutsche ent. Zeitschr. Lep. x; *E. consortaria*, China, p. 66, *pryeriaria*, Japan, p. 67, *sinicaria*, China, *niphonaria*, p. 68, *carearia, costimacularia*, p. 69, Japan, *obliquaria, brevifasciaria*, p. 70, *mandarinaria*, p. 71, China, LEECH, Ann. Nat. Hist. xx : n. spp.



- Eurymene subpurpuraria*, W. China, LEECH, p. 227, Ann. Nat. Hist. xix, n. sp.
- Eurytaphria minorata*, Bali, WARREN, p. 255, Nov. Zool. iv, n. sp.
- Eurythecodes*, n. g., near *Spilopera*, for *E. nigricola*, *straminea*, Niger, n. spp., WARREN, p. 117, t. c.
- Eusarca* ? *parallelaria*, Bogota, p. 490, *E. subfasciata*, Costa Rica, p. 491, WARREN, t. c., n. spp.
- Eustenophasma*, n. g., near *Mychonia*, for *E. galeopsis*, n. sp., São Paulo, WARREN, p. 491, t. c.
- Eustroma exsecuta*, var. n. *latifasciaria*, LEECH, p. 568, Ann. Nat. Hist. xix.
- E. fractifasciaria*, p. 563, *propriaria*, p. 564, *pulchraria*, p. 566, *angularia*, p. 569, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Eutomoepala maculata*, S. America, WARREN, p. 492, Nov. Zool. iv, n. sp.
- Euxena insulata*, Luzon, WARREN, p. 39, t. c., n. sp.
- Exelis quadripuncta*, Parana, WARREN, p. 467, t. c., n. sp.
- Falcinodes* ? *rufula*, Bolivia, WARREN, p. 414, t. c., n. sp.
- Fascellina deflavata*, Selangore, WARREN, p. 256, t. c.; *F. aurifera*, Borneo, WARREN, p. 118, t. c., n. spp.
- Fidonia pratana*, var. n. *mortuaria*, STAUDINGER, p. 314, Deutsche ent. Zeitschr. Lep. x. *F. piniaria*, ravages and parasites, KNAUTH (599).
- F. strigosata*, Luzon, WARREN, p. 100, Nov. Zool. iv; *F. flavinigra*, Venezuela, WARREN, p. 475, t. c. : n. spp.
- Gandaritis reduplicata*, China, WARREN, p. 235, Nov. Zool. iv; *G. flavomacularia*, China, p. 678, LEECH, Ann. Nat. Hist. xix : n. spp.
- Gathynia albibasis*, var. n. *seminigra*, WARREN, p. 204, Nov. Zool. iv.
- G. fasciaria*, Korea, LEECH, p. 187, Ann. Nat. Hist. xix; *G. divaricata*, Celebes, WARREN, p. 26, Nov. Zool. iv; *G. lignata*, Bali, WARREN, p. 204, Nov. Zool. iv; *G. orbifera*, Amazonas, WARREN, p. 414 : n. spp.
- Gelasma albidata*, Costa Rica, *munda*, La Plata, WARREN, p. 425, Nov. Zool. iv, n. spp.
- Genusa simplex*, Sulu arch., WARREN, p. 88, t. c., n. sp.
- Glaucopteryx subalbata*, Sikkim, WARREN, p. 235, Nov. Zool. iv, n. sp.
- Gnophos exculata*, Butl. (sub *Tephrosia*), var. n. *brunnearia*, LEECH, p. 333, Ann. Nat. Hist. xix. *G. crassipunctata*, figure, ALPHÉRAKY, pl. viii, fig. 3, Romanoff Mem. ix.
- G. agnitaria*, Amurland, STAUDINGER, p. 62, pl. iii, fig. 40, Deutsche ent. Zeitschr. Lep. x; *G. subvariegata*, pl. iv, fig. 34, p. 311, *adjectaria*, fig. 35, p. 312, Palestine, STAUDINGER, t. c.; *G. approximaria*, p. 327, *minutaria*, p. 328, *lentiginosaria*, p. 329, *incoloraria*, p. 330, *mandarinaria*, *punctivenaria*, p. 331, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Goniopteroloba conjuncta*, pl. v, fig. 9, p. 230, *fuscata*, fig. 8, p. 231, Philippines, WARREN, Nov. Zool. iv, n. spp.
- Gonodela perconfusa*, ♀, WARREN, p. 252, Nov. Zool. iv.
- G. commixta*, Niger, *distinguenda*, p. 106, *duplicilinea*, Natal, *impar*, Niger, p. 107, *multistrigata*, Natal, p. 108, WARREN, t. c.; *G. abbreviata*, Bali, WARREN, p. 251, t. c. : n. spp.
- Gonophaga*, n. g., *Ennominæ*, for *G. subpulchra*, n. sp., Queensland, WARREN, p. 400, t. c.
- Gonophylla ophiopa*, New Zealand, MEYRICK, p. 387, Tr. ent. Soc. London, 1897, n. sp.
- Grammicheila*, n. g. for *Metrocampa admirabilis*, Oberth., STAUDINGER, p. 3, Deutsche ent. Zeitschr. Lep. x.
- Gubaria fluidata*, Borneo, p. 108, *umbrata*, Natal, p. 109, WARREN, Nov. Zool. iv, n. spp.
- Gymnoscelis coquina* ? var. n. *semiviridis*, WARREN, p. 228, t. c.

- G. albicaudata*, p. 228, *cristata*, India, *grisea*, Fergusson island, *perangusta*, Borneo, p. 229, WARREN, t. c.; *G. coquina*, Cooktown, p. 69, *pallidirufa*, Celebes, p. 70, WARREN, t. c. : n. spp.
- Gynopteryx* = (*Lissostolodes*, Warr.), WARREN, p. 493, t. c.
- G. ennomaria*, Paraguay, p. 492, *immaculata*, San Domingo, p. 493, WARREN, t. c. : n. spp.
- Hæmalea bimacula*, Demerara, p. 438, *delicata*, Jamaica, p. 439, WARREN, Nov. Zool. iv, n. spp.
- Halterophora fulgurata*, New Guinea, WARREN, p. 39, t. c., n. sp.
- Hammaptera aurea*, Bogota, *pallidipars*, Colombia and Costa Rica, p. 452, *subolivescens*, Paraguay and Costa Rica, WARREN, p. 453, t. c., n. spp.
- Hazis cyanoptera*, description figure, PAGENSTECHER, p. 458, Abh. Senckenb. Ges. xxiii.
- Hebdomophruda*, n. g., p. 100, near *Prosopopolpha*, for *H. apicata*, *curvilinea*, n. spp., Natal, p. 101, WARREN, Nov. Zool. iv.
- Helicopage*? *velata*, Woodlark island, WARREN, p. 390, t. c., n. sp.
- Hemerophila grummi*, figure, ALPHÉRAKY, pl. viii, fig. 4, Romanoff Mem. ix.
- H. conjunctaria*, pl. vii, fig. 9, *obscuraria*, p. 431, *latimarginaria*, p. 432, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Hemipogon*, n. g., *Sterrhina*, for *H. narrata*, Tenimber, p. 54, *velutina*, Batchian, p. 55, n. spp., WARREN, Nov. Zool. iv.
- Hemistola flavitincta*, Khasia hills, WARREN, p. 211, t. c., n. sp.
- Hemitea albiistrigulata*, *approximans*, p. 39, *atridisca*, *malescripta*, *unilinea*, S. Africa, *simplex*, Java, p. 40, *vermiculata*, Niger, p. 41, WARREN, t. c.; *H. unilinearia*, p. 232, *mundaria*, p. 233, China, LEECH, Ann. Nat. Hist. xx : n. spp.
- Herbita*? *transversata*, Costa Rica, WARREN, p. 493, Nov. Zool. iv, n. sp.
- Hesperomiza*, n. g., p. 493, *Ennomina*, for *H. jaspidea*, n. sp., São Paulo, p. 494, WARREN, t. c.
- Heterophyrra rubida*, Venezuela, WARREN, p. 439, t. c., n. sp.
- Heterocallia*, n. g., near *Pericallia*, for *H. truncaria*, n. sp., Moupin, LEECH, p. 212, pl. vi, fig. 1, Ann. Nat. Hist. xix.
- Heterochasta lasioplaca*, Brisbane, LOWER, p. 14, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Heteroctenis*, n. g., *Sterrhida*, p. 71, for *H. dracontias*, *tigrina*, n. spp., Borneo, p. 72, MEYRICK, Tr. ent. Soc. London, 1897.
- Heterolocha spurcata*, Natal, WARREN, p. 118, Nov. Zool. iv; *H. indiscretaria*, Madagascar, MABILLE, p. 227, Ann. Soc. ent. France, 1897; *H. latifasciaria*, p. 228, *fuscifasciaria*, *rosearia*, p. 230, *marginaria*, *quadraria*, pl. vi, fig. 8, p. 231, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Heteromiza unilinea*, Celebes, WARREN, pp. 118 & 256, Nov. Zool. iv, n. sp.
- Heterostegane indularia*, var. *n. calidata*, WARREN, p. 78, Nov. Zool. iv.
- H. aridata*, Natal, WARREN, p. 78, t. c., n. sp.
- Heterusia albata*, p. 456, *flavipectus*, *funebria*, Bogota, *flavocellata*, p. 457, *particolor*, p. 458, Bolivia, WARREN, t. c., n. spp.
- Hybernia leucophaæaria*, var. SCHOPFER, p. 157, Deutsche ent. Zeitschr. Lep. x. *H. leucophaæaria*, var. *nigrilinsæaria*, LEECH, p. 320, Ann. Nat. Hist. xix.
- H. verecundaria*, Japan, LEECH, p. 320, t. c., n. sp.
- Hydatocapnia fumosa*, Niger, WARREN, p. 78, Nov. Zool. iv, n. sp.
- Hydrelia plenaria*, p. 77, *marmoraria*, *ochrearia*, p. 78, *straminearia*, *albidaria*, p. 79, *distinctaria*, *punctilinearia*, p. 80, *electaria*, p. 81, China, *angularia*, Japan, p. 82, LEECH, Ann. Nat. Hist. xx; *H. subrosea*, Bali, WARREN, p. 226, Nov. Zool. iv : n. spp.
- Hydriomena furcata*, notes on, PROUT, pp. 84, etc., Ent. Rec. 1897.
- H. hemisona*, New Zealand, MEYRICK, p. 385, Tr. ent. Soc. London, 1897, n. sp.

- Hylemera flavibasis*, Cameroons, WARREN, p. 241, Nov. Zool. iv; *H. nummulifera*, Congo, *renifera*, Sierra Leone, WARREN, p. 397, t. c. : n. spp.
- Hymenocharta*, n. g., near *Agirpa*, for *H. triplagiata*, n. sp., E. Africa, WARREN, p. 84, t. c.
- Hymenomima extersaria*, p. 467, *minuta*, Colombia, *semialba*, Amazons, p. 468, WARREN, t. c., n. spp.
- Hyostomodes*, n. g., near *Tephрина*, for *H. nubilata*, n. sp., E. Africa, pl. v, fig. 11, WARREN, p. 252, t. c.
- Hyperplema*, n. g., p. 414, *Epiplemidæ*, for *H. rudis*, n. sp., Onoribo, p. 415, WARREN, t. c.
- Hypnochlora olvidaria*, Parana, SCHAUB, p. 161, J. N. York Ent. Soc. v, n. sp.
- Hypochrosis annulata*, description, figure, PAGENSTECHE, p. 456, pl. xviii, fig. 3, Abh. Senckenb. Ges. xxxiii.
- Hypocala*, n. g., near *Tanaorhinus*, for *H. subfulva*, n. sp., Niger, WARREN, p. 41, Nov. Zool. iv.
- Hyposidra variabilis*, var. n. *siccifolia*, WARREN, p. 119, t. c.
- H. cæsia*, Penang, *linearis*, Natal, *nivitacta*, Bonthain, p. 257, *unimacula*, Palawan, p. 258, WARREN, t. c.; *H. albifurcata*, Sulu islands, *prunicolor*, New Guinea, WARREN, p. 119, t. c. : n. spp.
- Idiodes* (?) *pyrrhopa*, Sydney, LOWER, p. 264, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Induna*, n. g., *Sterrhinæ*, for *I. rufisalsa*, n. sp., Natal, WARREN, p. 55, Nov. Zool. iv.
- Iodis dentifascia*, Japan, *micra*, Bali, WARREN, p. 212, t. c.; *I. languescens*, Paramaribo, WARREN, p. 425, t. c. : n. spp.
- Iridopsis perstrigata*, Bolivia, WARREN, p. 469, Nov. Zool. iv, n. sp.
- Isandria*, n. g., *Ascotinæ*, type *Tephrosia insectoria*, Wlk., WARREN, p. 469, t. c.
- Isoplenia*, n. g., p. 55, *Sterrhinæ*, for *I. trisinuata*, n. sp., Natal, p. 56, WARREN, t. c.
- Jankowskia confusa* (= *Boarmia superans*, Græs.), Amurland, STAUDINGER, p. 47, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Krananda lucidaria*, China, LEECH, p. 305, pl. vi, fig. 10, Ann. Nat. Hist. xix, n. sp.
- Kuldscha oberthuri*, figure, ALPHÉRAKY, pl. iv, fig. 8, Romanoff Mem. ix.
- Lampadopteryx*, n. g., *Palyadinæ*, p. 75, for *L. scintillans*, n. sp., Borneo, p. 76, WARREN, Nov. Zool. iv.
- Larentia plurilinearia*, p. 655, *nitidaria*, p. 657, *fractifasciaria*, *torpidaria*, p. 658, *rotundaria*, p. 659, *erebiaria*, p. 660, *confusaria*, p. 661, *nigri-fasciaria*, *nudaria*, p. 662, *perplexaria*, *variaria*, p. 663, *inconspicuaria*, p. 664, China, *punctilinearia*, Japan, *promiscuaria*, p. 665, *tripunctaria*, p. 666, *L.?* *intersectoria*, *costipunctaria*, p. 667, *bimaculata*, p. 669, *costinotaria*, p. 670, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Lassaba subdecorata*, China, WARREN, p. 398, Nov. Zool. iv, n. sp.
- Lepiodes ocellata*, Zambesi, WARREN, p. 94, t. c., n. sp.
- Leptacme*, n. g., p. 56, *Sterrhinæ*, for *L. malescripta*, n. sp., Natal, p. 57, WARREN, t. c.
- Leucomicra*, n. g., type *Erosia leucospilaria*, Wlk., WARREN, p. 494, t. c.
- Leuconotha*, n. g., *Epiplemidæ*, for *L. venosa*, n. sp., Venezuela, WARREN, p. 415, t. c.
- Leucula nana*, São Paulo, WARREN, p. 464, t. c., n. sp.
- Ligdia interrupta*, Natal, WARREN, p. 88, t. c.; *L. japonaria*, pl. vii, fig. 1, p. 449, *ciliaria*, p. 450, Japan, LEECH, Ann. Nat. Hist. xix : n. spp.
- Lipomelia striata*, Niger, WARREN, p. 220, Nov. Zool. iv; *L. divaricata*, Venezuela, *subtincta*, Bolivia, WARREN, p. 439, t. c. : n. spp.
- Lobocraspeda*, n. g., *Braccinæ*, for *L. cæruleostriga*, n. sp., New Guinea, WARREN, p. 242, pl. v, fig. 3, t. c.

- Lobogonia parallelaria*, p. 550, *conspicuaria*, *fasciaria*, p. 551, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Lobophora exportata*, Amurland, STAUDINGER, p. 73, pl. iv, fig. 2, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Lophodes sinistraria*, metamorphoses, FROGGATT, p. 136, cuts, Agric. Gaz. N. S. W. 1897.
- Loxaspilates fixseni*, figured, ALPHÉRAKY, p. 62, pl. iv, fig. 6, Romanoff Mem. ix.
- L. straminearia*, p. 234, *nigromacularia*, *L. ? trilinearia*, p. 235, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Luxiaria teniata*, Niger, WARREN, p. 109, Nov. Zool. iv; *L. consimilaria*, China, LEECH, p. 304, Ann. Nat. Hist. xix; *L. ditrota*, Sambawa, MEYRICK, p. 76, Tr. ent. Soc. London, 1897: n. spp.
- Lycauges acuta*, Natal, *concurrents*, Loangwa, *extremata*, Niger, WARREN, p. 57, Nov. Zool. iv, n. spp.
- Lygranoa sinuosaria*, p. 548, *grisearia*, p. 549, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Macaria normata*, pl. iv, fig. 2, *anomolata*, fig. 3, figured, ALPHÉRAKY, Romanoff Mem. ix.
- M. cataleucaria*, Zanzibar, MABILLE, p. 229, Ann. Soc. ent. France, 1897; *M. intermaculata*, Amurland, STAUDINGER, pl. i, fig. 28, p. 41, Deutsche ent. Zeitschr. Lep. x; *M. intermediaria*, p. 307, *monticolaria*, *elongaria*, pl. vi, fig. 14, p. 308, *intersectaria*, *ornataria*, p. 310, China, LEECH, Ann. Nat. Hist. xix: n. spp.
- Magida distincta*, Amazons, WARREN, p. 494, Nov. Zool. iv, n. sp.
- Medasina juvenis*, Java, WARREN, p. 95, t. c., n. sp.
- Megalochlora mandarinaria*, China, LEECH, p. 235, Ann. Nat. Hist. xx, n. sp.
- Megatheca*, n. g., near *Chloroclystis*, for *M. purpurea*, n. sp., Penang, WARREN, p. 230, Nov. Zool. iv.
- Melanchroia ateræa notata*, subsp. n., WARREN, p. 463, t. c.
- Mesoglypta*, n. g., *Epiplemidæ*, for *M. fleximargo*, n. sp., Lombok, WARREN, p. 205, t. c.
- Mesomima*, n. g., near *Agirpa*, for *M. albifrons*, n. sp., Congo, WARREN, p. 85, t. c.
- Mesoptila anthracias*, Victoria, LOWER, p. 12, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Mesotype undata*, Amurland, STAUDINGER, pl. iii, fig. 44, p. 70, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Metabrazas luridaria*, *rufonotaria*, p. 451, *incompositaria*, p. 452, *M. ? nigromarginaria*, p. 453, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Metallochloa differens*, Tenimber, WARREN, p. 41, Nov. Zool. iv, n. sp.
- Metrocampa biplaga* = (*glaucias*, Meyr.), LOWER, p. 29, P. Linn. Soc. N. S. Wales, xxii.
- M. ferruginaria*, Comoro islds., MABILLE, p. 231, Ann. Soc. ent. France, 1897, n. sp.
- Miantonota integra*, Petropolis, WARREN, p. 425, Nov. Zool. iv, n. sp.
- Microdes typhopa*, S. Australia, LOWER, p. 50, Tr. R. Soc. S. Austral. xxi; *M. epicyrtis*, New Zealand, MEYRICK, p. 384, Tr. ent. Soc. London, 1897: n. spp.
- Microgonia apidanis*, var. n. *bicolor*, p. 495, *M. olivacea*, var. n. *straminea*, p. 496, WARREN, Nov. Zool. iv.
- M. affinis*, S. America, *chalybeata*, São Paulo, p. 495, *lilacina*, Guiana p. 496, WARREN, t. c., n. spp.
- Micrologia*, n. g., *Proscopolophinae*, p. 124, for *M. dolosa*, n. sp., Cape Good Hope, p. 125, WARREN, t. c.
- Microloxia ? pallida*, Canaries, WARREN, p. 390, Nov. Zool. iv, n. sp.
- M. ruficornis*, *M. ? serraticornis*, Natal, WARREN, pp. 42 & 212, t. c.; *M. biatriata*, S. Brazil, WARREN, p. 426, Nov. Zool. iv: n. spp.

- Micronidia simpliciat*a, var. n. *mediofusca*, WARREN, p. 238, t. c.  
*Microxena*, n. g., near *Peratophyga*, for *M. invalida*, n. sp., Bali, WARREN, p. 238, t. c.  
*Milionia flavotogata*, description, figure, PAGENSTECHER, p. 457, pl. xix, fig. 5, Abh. Senckenb. Ges. xxiii. *M. flavotogata*, Pag., referred to *Bociraza*, and is *B. recurvata*, Wlk., *M. cyanifera* (= *auriflamma*, Th.-Mieg.), var. n. *gilolensis*, ROTHSCHILD, p. 512, Nov. Zool. iv. *M. rawakensis*, variation, etc., THIERRY-MIEG, p. 44, Bull. Soc. ent. France, 1897.  
*M. auriflamma*, Batchian, THIERRY-MIEG, p. 44, Bull. Soc. ent. France, 1897; *M. dohertyi*, New Guinea, ROTHSCHILD, p. 313, pl. vii, fig. 11, Nov. Zool. iv; *M. dulitana*, Sarawak, *assimilis*, New Hanover, *rona*, p. 510, *dubiosa*, New Guinea, *websteri*, New Hanover, p. 511, *meforana*, New Guinea, p. 512, ROTHSCHILD, t. c. : n. spp.  
*Mimogonodes*? *squamata*, Bolivia, WARREN, p. 497, Nov. Zool. iv, n. sp.  
*Mixochlora alternata*, Luzon, WARREN, p. 42, Nov. Zool. iv, n. sp.  
*Mnesampela petrochroa*, S. Australia, LOWER, p. 15, P. Linn. Soc. N. S. Wales, xxii, n. sp.  
*Mnesigea*, n. g., *Ascotinæ*, for *M. sinuata*, S. Australia, n. sp., WARREN, p. 95, t. c.  
*Mnesithetis inobtrusa*, Celebes, *ochrea*, Woodlark island, WARREN, p. 393, t. c., n. sp.  
*Molybdogompha*, n. g., *Palyadinæ*, p. 460, for *M. biseriata*, n. sp., Paraguay, p. 461, WARREN, t. c.  
*Momonipta*, n. g., *Cyllopodinae*, for *M. albiplaga*, n. sp., Colombia, WARREN, p. 421, t. c.  
*Monoctenia polyspila*, Queensland, LOWER, p. 263, P. Linn. Soc. N. S. Wales, xxii, n. sp.  
*Myrteta sinensaria*, pl. vi, fig. 13, *tripunctaria*, p. 195, *argentaria*, p. 196, China, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Nadagara albovenaria*, Japan, LEECH, p. 302, Ann. Nat. Hist. xix, n. sp.  
*Nadagurodes turpis*, Bali, WARREN, p. 253, Nov. Zool. iv, n. sp.  
*Naxa margaritaria*, *angustaria*, p. 545, *contraria*, *montanaria*, *obliquaria*, p. 546, China, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Neagathia*, n. g., type *Nemoria corruptata*, Feld., WARREN, p. 426, Nov. Zool. iv.  
*Nelo flora*, Bolivia, p. 463, *satellitica*, Costa Rica, p. 464, WARREN, t. c., n. spp.  
*Nemora masonaria*, Jalapa, SCHAUS, p. 161, J. N. York Ent. Soc. v, n. sp.  
*Nemoria chlorinaria*, Madagascar, p. 230, *viridellaria*, Mauritius, *aquaria*, Madagascar and Comoro islands, p. 231, MABILLE, Ann. Soc. ent. France, 1897; *N. rectilinearis*, China, LEECH, p. 241, Ann. Nat. Hist. ix : n. sp.  
*Neochorista*, n. g., type *Paida transpecta*, Hub., WARREN, p. 440, Nov. Zool. iv.  
*Neodora*, n. g., near *Sabulodes*, for *N. costinotata*, Colombia, n. sp., WARREN, p. 497, t. c.  
*Neolythria djrouchiaria*, var. n. *montana*, pl. vii, fig. 11, *N. abrazaria*, var. n. *confinaria*, LEECH, p. 460, Ann. Nat. Hist. xix.  
*N. consimilaria*, *oberthuri*, pl. vii, fig. 6, p. 461, China, *nubiferaria*, Tibet, p. 462, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Nepheloleuca acuta*, Cuba, WARREN, p. 498, Nov. Zool. iv, n. sp.  
*Nephodia albinigra*, Bolivia, WARREN, p. 464, t. c., n. sp.  
*Neromia*, n. g. for *Nemoria jodisata*, n. sp., Palestine, pl. iv, fig. 28, STAUDINGER, p. 304, Deutsche ent. Zeitschr. Lep. x.  
*Nealcia*, n. g. for *Aloia*? *fuscibrunnea*, WARREN, p. 96, Nov. Zool. iv.  
*Neurotoca*, n. g., near *Euchloris*, for *N. notata*, n. sp., E. Africa, WARREN, p. 43, t. c.

- Nobilia oblitterata*, Borneo, WARREN, p. 220, t. c.; *N. nebulosa*, Amboyna, WARREN, p. 58, t. c., n. spp.
- Noreia muricolor*, Natal, WARREN, p. 30, t. c.; *N. albifimbria*, Celebes, WARREN, p. 206, t. c.; *N. papuensis*, New Guinea, WARREN, p. 387, t. c. : n. spp.
- Nothabrazas*, n. g., near *Negeta*, for *N. commaculata*, n. sp., E. Africa, WARREN, p. 88, t. c.
- Nothomiza costalis*, var. n. *intensa*, WARREN, p. 120, t. c.
- N. binotata*, *nana*, Khasia hills, WARREN, p. 239, Nov. Zool. iv, n. spp.
- Notoreas isoleuca*, New Zealand, MEYRICK, p. 386, Tr. ent. Soc. London, 1897, n. sp.
- Numeraria pulveraria*, var., BASTELBERGER, p. 216, Ent. Zeit. Stettin, lviii.
- Nychiodes gigantaria*, Amurland, STAUDINGER, pl. i, fig. 32, p. 48, Deutsche ent. Zeitschr. Lep. x.
- Nyctibadistes*, n. g., p. 415, *Epiplemidæ*, near *Gathynia*, for *N. informis*, n. sp., Amazonas, p. 416, WARREN, Nov. Zool. iv.
- Obeidia gigantearia*, *conspurcata*, China, LEECH, p. 458, Ann. Nat. Hist. xix, n. spp.
- Ochyria dispar*, Luzon, WARREN, p. 72, Nov. Zool. iv, n. sp.
- Odontopera*? *ochraceata*, Amurland, STAUDINGER, p. 34, pl. iv, fig. 1, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Odontoptila*, n. g., *Stierrhina*, for *O. brunnea*, p. 440, São Paulo, *cubitata*, *margarita*, Venezuela, p. 441, n. spp., WARREN, Nov. Zool. iv.
- Enochroma simplex*, W. Australia, WARREN, p. 206, t. c., n. sp.
- Enoptila*, n. g., *Selidosemina*, type *Oxydia mixtata*, Gn., WARREN, p. 475, Nov. Zool. iv, *Æ. rubra*, Jamaica, p. 476, *id. t. c.*, n. sp.
- Enospila flavilinea*, Cooktown, WARREN, p. 212, t. c., n. sp.
- Enothalia*, n. g., *Selidosemina*, p. 475, type *alexonaria*, Wlk. with *Æ. subochrea*, n. sp., Demerara, p. 476, WARREN, t. c.
- Oligopleura auleata*, var. n. *diversicolor*, WARREN, p. 449, t. c.
- Omiza tortuosa*, Congo, WARREN, p. 258, pl. v, fig. 24, t. c.; *O. chlorophora*, Wetter, *informis*, Sylhet, WARREN, p. 120, t. c.; *O. sublimbaria*, Borneo, WARREN, p. 401, t. c. : n. spp.
- Onycodes rubra*, Queensland, WARREN, p. 27, t. c., n. sp.
- Oospila*, n. g., p. 426, for *O. hyalina*, Colombia, *marginata*, *violacea*, Brit. Guiana, n. spp., p. 427, WARREN, t. c.
- Ophthalmodes ruficornis*, Celebes, WARREN, p. 249, t. c.; *O. subpicaria*, China, LEECH, p. 335, Ann. Nat. Hist. xix : n. spp.
- Opisthoxia nitidisquama*, Demerara, WARREN, p. 461, Nov. Zool. iv, n. sp.
- Oporabia*? *productaria*, China, LEECH, p. 671, Ann. Nat. Hist. xix, n. sp.
- Organopoda subbrunnea*, Celebes, WARREN, p. 393, Nov. Zool. iv, n. sp.
- Oricia biptagiata*, Bolivia, WARREN, p. 421, Nov. Zool. iv, n. sp.
- Orthocabera conspicua*, Celebes, WARREN, p. 79, t. c., n. sp.
- Ortholitha erschoffi*, Centr. Asia, ALPHÉRAKY, p. 65, Romanoff Mem. ix, n. sp.
- Ourapteryx convergens*, Simla, *incaudata*, Kina Balu, WARREN, p. 75, Nov. Zool. iv, n. spp.
- Oxydia yema*, Ecuador, DOGNIN, p. 30, Ann. Soc. ent. Belgique, xli, n. sp.
- Ozola pulverulenta*, Weenen, WARREN, p. 30, Nov. Zool. iv; *O. decolorata*, Bali, WARREN, p. 207, t. c.; *O. sinuata*, Sumba, WARREN, p. 387, t. c.; *O. spilotis*, Sambawa, MEYRICK, p. 74, Tr. ent. Soc. London, 1897 : n. spp.
- Pachycopsis*, n. g., *Geometrina*, for *P. tridentata*, n. sp., Paramaribo, WARREN, p. 428, Nov. Zool. iv.
- Pachythalia*, n. g., p. 220, near *Perixera*, for *P. rotundata*, n. sp., Penang, p. 221, WARREN, t. c.
- Pamphlebia*, n. g., *Geometrina*, type *rubrolimbaria*, Gn., WARREN, p. 213, t. c.

- Panæthia maculosa*, Sumatra, KIRBY (587), v, p. 239, pl. cxlviii, fig. 4, n. sp.  
*Parabraxas*, n. n. for *Oberthuria*, LEECH, (cf. ante, p. 212), LEECH, p. 110, Ann. Nat. Hist. xx.  
*Parachoreutes subpurpurea*, British Guiana, WARREN, p. 417, Nov. Zool. iv, n. sp.  
*Paracomistis subtractata*, Surinam, WARREN, p. 498, t. c., n. sp.  
*Paracrocota*, n. g., *Ennominae*, for *P. epionata*, p. 258, Niger, *perviata*, Madagascar, p. 259, n. spp., WARREN, t. c.  
*Paradirades maculata*, Bali, WARREN, p. 205, t. c., n. sp.  
*Paragonia maculata*, Costa Rica, WARREN, p. 498, t. c., n. sp.  
*Paralæa maritima*, S. Australia, LOWER, p. 51, Tr. R. Soc. S. Austral. xxi, n. sp.  
*Parametrodes*, n. g., near *Petelia*, for *P. dispar*, n. sp., Cooktown, WARREN, p. 250, Nov. Zool. iv.  
*Paraprasina*, n. g., *Geometrinæ*, for *P. discolor*, n. sp., S. Africa, WARREN, p. 43, t. c.  
*Parasynegia convergens*, Khasia hills, WARREN, p. 79, t. c.; *P. nigriclavata*, Khasia hills, WARREN, p. 80, t. c.; *P. nigrifrons*, Bonthain, WARREN, p. 239, t. c.: n. spp.  
*Pareuchloris? salsa*, Sierra Leone, WARREN, p. 43, t. c., n. sp.  
*Paromphacodes*, n. g., p. 428, *Geometrinæ*, for *P. rubrimargo*, São Paulo, *rubristellata*, Bogotà, n. spp., p. 429, WARREN, t. c.  
*Parrhesia*, n. g., *Nephodiinæ*, for *P. illineata*, *nigrivena*, n. spp., Bogotà, and including *cissa*, *clælia*, *philyra*, Druce, WARREN, p. 465, t. c.  
*Pellonia grumaria*, figure, ALPHÉRAKY, pl. iv, fig. 1, Romanoff Mem. ix.  
*Pelurga straminea*, Argentina, WARREN, p. 454, Nov. Zool. iv, n. sp.  
*Peratostega*, n. g., near *Stegania*, for *P. coctata*, n. sp., Borneo, WARREN, p. 80, t. c.  
*Percnia longimacula*, Kulu, WARREN, p. 89, t. c.; *P. grisearia*, *fumidaria*, China, LEECH, p. 455, Ann. Nat. Hist. xix: n. spp.  
*Pergama albivena*, S. America, *lignata*, p. 499, *plagodiata*, Venezuela, *uniformis*, Parana, p. 500, WARREN, Nov. Zool. iv, n. spp.  
*Pericallia marmorataria*, p. 207, pl. vi, fig. 15, *productaria*, *olivaria*, p. 208, *crenularia*, *latimarginaria*, *variaria*, p. 209, China, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Peridela*, n. g., near *Gonodela*, for *P. crassata*, *curvifascia*, Loangwa, *interrupta*, Natal, p. 100, *triumbrata*, Penang, p. 101, n. spp., WARREN, Nov. Zool. iv.  
*Perissopteryx*, n. g., near *Thysanopyga*, for *P. delusa*, n. sp., Costa Rica, WARREN, p. 477, t. c.  
*Perixera mediusta*, referred to *Brachycola*, WARREN, p. 392, Nov. Zool. iv, *P. confiniscripta rubripuncta*, subsp. n., *id.*, p. 394.  
*P. imbuta*, Khasia hills, *transversata*, N. Queensland, WARREN, p. 58, t. c.; *P. ? radiata*, Bonthain, *P. rufannularia*, Apia, WARREN, p. 222, t. c.; *P. subsimilis*, Celebes, *P. ? pleniluna*, Penang, WARREN, p. 394, t. c.; *P. homostola*, Talaut, MEYRICK, p. 72, Tr. ent. Soc. London, 1897: n. spp.  
*Perizoma fasciolata*, Paraguay, WARREN, p. 454, Nov. Zool. iv, n. sp.  
*Perusia elegans*, *pulverosa*, Bolivia, p. 501, *sticta*, Colombia, p. 502, WARREN, t. c., n. spp.  
*Petelia strigata*, Natal, p. 103; *P. furva*, Celebes, p. 398, *P. interrupta*, Parana, p. 476, WARREN, Nov. Zool. iv, n. spp.  
*Petrodava olivata*, E. Africa, WARREN, p. 253, Nov. Zool. iv; *P. ? nigripuncta*, Australia, WARREN, p. 111, Nov. Zool. iv: n. spp.  
*Phaselia ? dentilinea*, S. Africa, pl. v, fig. 5, p. 245, WARREN, Nov. Zool. iv, n. sp.  
*Phellinodes conifera*, Paramaribo, p. 417, *nigrimacula*, Bolivia, p. 418, WARREN, t. c., n. spp.

- Phibalapteryx tersata*, var. n. *chinensis*, LEECH, p. 561, Ann. Nat. Hist. xix.  
*P. macularia, flavovenata*, China, LEECH, p. 562, Ann. Nat. Hist. xix, n. spp.  
*Phigalia sinuosaria*, Japan, LEECH, p. 321, t. c., n. sp.  
*Phorodesma pustulata*, larval habits, AULD, p. 301, Entomologist, 1897.  
*P. pulchra*, Palestine, STAUDINGER, p. 302, pl. iv, fig. 27, Deutsche ent. Zeitschr. Lep. x; *P. ? nemoriata*, Amurland, STAUDINGER, p. 9, t. c.: n. spp.  
*Photoscotosia funebris*, ♀, WARREN, p. 235, Nov. Zool. iv. *P. leechi*, figure, ALPHÉRAKY, pl. iv, fig. 7, Romanoff Mem. ix.  
*P. fuscicaria*, Tibet, p. 672, *albomacularia*, p. 673, *pallifuscicaria*, p. 674, *rectilinearis*, p. 675, *apicinatoria*, p. 675, *propugnataria*, p. 676, China, LEECH, Ann. Nat. Hist. xix: n. spp.  
*Phrisosceles argyronoma*, var. n. *heterospila*, WARREN, p. 222, Nov. Zool. iv.  
*Phrudocentra pupillata*, Demerara, WARREN, p. 429, t. c., n. sp.  
*Phyletis silonaria*, characters, the genus, WARREN, p. 222, t. c.  
*Phyllabraxas*, n. g., near *Arichanna*, for *P. curvaria*, pl. vii, fig. 3, *similaria*, p. 441, *exoletaria*, p. 442, with var. *dirisaria*, *conspicuaris*, p. 443, n. spp., China, LEECH, Ann. Nat. Hist. xix.  
*Phyllodonta ustanalis*, São Paulo, WARREN, p. 502, Nov. Zool. iv, n. sp.  
*Physetobasis heliocoma*, Sambawa, MEYRICK, p. 70, Tr. ent. Soc. London, 1897, n. sp.  
*Physocleora*, n. g., near *Hymenomima*, type *punctilla*, Schaus, with *P. pauper*, Surinam, p. 469, *pusilla*, Venezuela, p. 470, n. spp., WARREN, Nov. Zool. iv.  
*Pingasa subpurpurea*, Borneo, WARREN, p. 31, t. c., n. sp.  
*Pisoraca punctata*, Cooktown, WARREN, p. 222, t. c., n. sp.  
*Pitheca fractimacula*, Stanley Pool, WARREN, p. 242, t. c., n. sp.  
*Plutycerota crinita*, Luzon, WARREN, p. 120, t. c., n. sp.  
*Plemysia hastata*, var. n. *chinensis*, LEECH, p. 570, Ann. Nat. Hist. xix.  
*P. parvularia, fatuaria*, p. 571, *castaria*, p. 572, *bellaria*, p. 573, China, LEECH, t. c., n. spp.  
*Plerocymia albiclausa*, Natal, *nigrocellata*, Uganda, pl. v, fig. 6, WARREN, p. 236, Nov. Zool. iv, n. spp.  
*Pleuroprucha ochrea*, Venezuela, *roseipuncta*, Paramaribo, WARREN, p. 442, t. c., n. spp.  
*Plutodes hilaropa*, Pulo Laut, MEYRICK, p. 75, Tr. ent. Soc. London, 1897, n. sp.  
*Pæcilaicis subincta*, Luzon, WARREN, p. 96, Nov. Zool. iv, n. sp.  
*Pogonopygia nigrilabata*, subsp. n. *attenuata*, WARREN, p. 240, t. c.  
*Polygraphodes*, n. g., *Sterrhinae*, for *P. boarmiata*, n. sp., Petropolis, WARREN, p. 442, t. c.  
*Polystroma*, n. g., near *Melitulias*, p. 236, for *P. subspissata*, n. sp., Natal, p. 237, WARREN, t. c.  
*Pomusia albolinearia*, China, LEECH, p. 679, Ann. Nat. Hist. xix; *P. euryopsis*, p. 69, *gelastis*, p. 70, Pulo Laut, MEYRICK, Tr. ent. Soc. London, 1897: n. spp.  
*Potera albiquadrata*, Batchian, WARREN, p. 89, Nov. Zool. iv, n. sp.  
*Prasinocyma*, n. g., near *Thalassodes*, for *P. rufitincta*, Lifu, *unipunctata*, Natal, n. spp., WARREN, p. 44, t. c.  
*P. albipunctata*, Sumba, WARREN, p. 390, t. c., n. sp.  
*Pristostegania*, n. g., near *Stegania*, type *trilineata*, Moore, for *P. ? bilineata*, Borneo, *P. flavata*, Natal, n. spp., WARREN, t. c., p. 81.  
*Problepsis curculifera*, Singapore, *digammata*, Natal, *hemicyclata*, Kei Toal, WARREN, p. 59, t. c.; *P. craspediata*, New Guinea, WARREN, p. 222, t. c., n. spp.  
*Proboscetes*, n. g. for *quadrinotata*, Butl., MEYRICK, p. 73, Tr. ent. Soc. London, 1897.



- P. pallidicincta*, Java, WARREN, p. 213, Nov. Zool. iv, n. sp.  
*Procharodes pilosa*, Colombia, WARREN, p. 502, t. c., n. sp.  
*Prochasma*, n. g., near *Stegania*, for *P. mimica*, n. sp., Khasia hills, WARREN, p. 81, t. c.  
*Procypha*, n. g., near *Proboloptera*, for *P. maculosata*, n. sp., Cape Good Hope, WARREN, t. c., p. 121.  
*Progonodes*, n. g., p. 429, for *Racheospila stagonata*, Feld., WARREN, t. c.  
*Psaliodes confusa*, Jamaica, WARREN, p. 454, t. c., n. sp.  
*Pseudalois*, n. g., near *Medasina*, p. 96, for *P. catoriata*, *cinerascens*, Pulo Laut, *P. ? pectinata*, Niger, n. spp., pp. 97 & 249, WARREN, t. c.  
*Pseudasthena sordida*, Timor, WARREN, p. 223, t. c., n. sp.  
*Pseudopanthera iogramma*, W. Australia, MEYRICK, p. 377, Tr. ent. Soc. London, 1897, n. sp.  
*Pseudoterpna koreana*, Korea, ALPHÉRAKY, p. 181, pl. x, fig. 6, Romanoff Mem. ix; *P. singularis*, Victoria, KERSHAW, p. 104, pl., Victorian Natural. xiv : n. spp.  
*Psilocambogia undulosaria*, Amboyna, WARREN, p. 227, Nov. Zool. iv, n. sp.  
*Psilocerea*, referred to *Ennominae*, *P. apicata* = (*P. apiciata*, Warr.), WARREN, p. 402, t. c.  
*P. apicata*, Natal, *nigromaculata*, Madagascar, WARREN, p. 98, t. c.; *P. apiciata*, S. Africa, WARREN, p. 259, t. c. (cf. supra) : n. spp.  
*Psilopora*, n. g., *Ascotinae*, type *thesea*, Schaus, WARREN, p. 470, t. c.  
*Psilotaphria viridulata*, Khasia hills, WARREN, p. 259, t. c., n. sp.  
*Pyra rufolinearia*, W. China, LEECH, p. 212, Ann. Nat. Hist. xix, n. sp.  
*Ptochophyle ephyrata*, Tenimber, *P. ? pulverulenta*, Perak, WARREN, p. 60, Nov. Zool. iv, n. spp.  
*Ptychopoda semisericea*, Khasia hills, p. 60, *nigrosticta*, Natal, p. 61, WARREN, t. c.; *P. angustipennis*, Cooktown, *carneola*, Penang, p. 223, *crinipes*, Queensland, *exilinata*, Natal, p. 224, WARREN, t. c.; *P. ? amplimargo*, Petropolis, *jamaicensis*, Jamaica, *P. limitata*, Venezuela, p. 443, *percrinita*, S. Brazil, *rosea*, Paramaribo, *subpilosa*, Venezuela, p. 444, *subvestita*, Petropolis, *triangularis*, São Paulo, p. 445, *P. ? virginea*, Paramaribo, p. 446, WARREN, t. c. : n. spp.  
*Racheospila arpata*, Rio Janeiro, SCHAUS, p. 161, J. N. York Ent. Soc. v; *R. concentrata*, Jamaica, *dentilinea*, *R. ? jaspidata*, Demerara, p. 430, *R. rosipara*, Venezuela, p. 431, WARREN, Nov. Zool. iv : n. spp.  
*Racotis boarmiaria rufaria*, subsp. n., WARREN, p. 98, t. c.  
*Ratiaria citrina*, Jamaica, WARREN, p. 459, t. c., n. sp.  
*Remodes ? confusidentata*, Natal, *denigrata*, Perak, WARREN, p. 66, t. c.; *R. cirrhigera*, Woodlark Is., WARREN, p. 395, t. c.; *R. curticornis*, Borneo, p. 231, *contorta*, Penang, *pallidiplaga*, Java, p. 232, WARREN, t. c. : n. spp.  
*Rhinodia ? sordidata*, Natal, WARREN, p. 111, t. c., n. sp.  
*Rhodophthitus ? simplex*, Lake Nyassa, WARREN, p. 89, t. c., n. sp.  
*Rhodostrophia muricolor*, Simla, WARREN, p. 61, t. c.; *R. subrufa*, Simla, WARREN, p. 224, t. c.; *R. farinosa*, Tibet, WARREN, p. 394, t. c.; *R. ? sinuosaria*, China, LEECH, p. 108, Ann. Nat. Hist. xx : n. spp.  
*Rhomborista*, n. g., near *Enospila*, type *devezata*, Wlk., p. 44, with *R. semipurpurea*, n. sp., Chittagong hills, p. 45, WARREN, Nov. Zool. iv.  
*R. undiferata*, Wlk. (sub *Comibana*), characters and variation, WARREN, p. 391, t. c.  
*Rhopatista*, n. g., *Hydriomeninae*, type *ignifera*, Mieg, with *R. fulvifusa*, n. sp., Costa Rica, WARREN, t. c., p. 455.  
*Rhynchobapta flavicostaria*, China, LEECH, p. 303, Ann. Nat. Hist. xix, n. sp.  
*Rumia trimacularia*, pl. vi, fig. 9, *inornataria*, China, LEECH, p. 298, t. c., n. spp.

- Sabulodes? bilineata*, Colombia, WARREN, p. 503, Nov. Zool. iv, n. sp.  
*Sauris nigrilinearia*, *nanaria*, Japan, LEECH, p. 76, Ann. Nat. Hist. xx, n. spp.  
*Scardamia maculata*, E. Africa, WARREN, p. 240, Nov. Zool. iv; *S. obliquaria*, Korea, LEECH, p. 202, Ann. Nat. Hist. xix: n. spp.  
*Scioglyptis lithina*, Queensland, *semifascia*, New Guinea, WARREN, p. 99, Nov. Zool. iv, n. spp.  
*Scotopterix lignicolor*, Borneo, WARREN, p. 90, t. c., n. sp.  
*Scotosia multilinearis*, *bipunctularia*, p. 555, *fasciaria*, p. 557, *grisearia*, p. 558, *marmoraria*, p. 559, *interruptaria*, p. 560, China, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Selenia sordidaria*, p. 205, *S.? crenularia*, *bilinearis*, p. 206, China, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Selenopsis grisearia*, Moupin, LEECH, p. 224, t. c., n. sp.  
*Selidosema catoteniaria*, var. *restrictaria*, LEECH, p. 336, t. c.  
*S. cremnopa*, Auckland, MEYRICK, p. 387, Tr. ent. Soc. London, 1897, n. sp.  
*Semiothisa emersaria* and *translineata*, Wlk. are one, WARREN, p. 399, Nov. Zool. iv.  
*S. parallacta*, Zomba, WARREN, pp. 112, 399, t. c.; *S. masonata*, Jalapa, *paranaria*, Castro, SCHAUS, p. 163, J. N. York Ent. Soc. v; *S. collineta*, Amazons, *crepuscularia*, São Paulo, p. 478, *debiliata*, Venezuela, *fidelis*, Costa Rica, p. 479, *impicta*, Colombia, *inexcisa*, Trinidad, *nigropunctata*, Venezuela, p. 480, *nitidata*, Amazons, *occultata*, p. 481, *senescens*, *subclathrata*, p. 482, Brazil, *subvalida*, Paraguay, *trigonata*, Petropolis, p. 483, WARREN, Nov. Zool. iv: n. spp.  
*Siculodopsis*, n. g., *Epiplemidæ*, for *S. flaviceps*, n. sp., S. Brazil, WARREN, p. 416, Nov. Zool. iv.  
*Sicya inquinata*, Venezuela, WARREN, p. 503, t. c., n. sp.  
*Sicyodes ocellata*, Natal, WARREN, p. 260, t. c., n. sp.  
*Simopteryx subflavata*, Bolivia, WARREN, p. 503, t. c., n. sp.  
*Simotricha*, n. g., p. 395, near *Chloroclystis*, for *S. conversa*, n. sp., Khasia hills, p. 396, WARREN, t. c.  
*Sirinopteryx rufivinctata*, var. *n. interfusca*, WARREN, p. 122, t. c.  
*Somatina figurata*, Natal, WARREN, p. 61, t. c., n. sp.  
*Spilocraspedu? canisquama*, *S. circumscripta*, Colombia, p. 504, *innotata*, Venezuela, *S.? nigripunctata*, Bolivia, p. 505, WARREN, t. c., n. spp.  
*Spiloctenia*, n. g., *Heterusiinae*, for *S. ocellata*, n. sp., Reyes, WARREN, p. 458, t. c.  
*Spilopera angularis*, p. 300, *crenularis*, *S.? roseimarginaria*, p. 301, China, LEECH, Ann. Nat. Hist. xix, n. spp.  
*Stegania irroraria*, Japan and China, LEECH, p. 203, Ann. Nat. Hist. xix, n. sp. [but *op. cit.* xx, p. 245 said to be *hyriaria*, Warr.].  
*Steirophora*, n. g., near *Sauris*, for *S. auratisquama*, Java, *punctatissima*, Celebes, n. spp., and including *Phthonoloba olivacea*, Warr., WARREN, p. 67, Nov. Zool. iv.  
*Stenulcidia*, n. g., *Ascotinae*, p. 470, type *quisquiliaria*, Gn., with *S. differens*, Paraguay, *furinosa*, Venezuela, p. 471, *fusca*, *pulverosa*, Paraguay, p. 472, WARREN, t. c., n. spp.  
*Stenocharta picaria*, New Guinea, WARREN, p. 397, t. c., n. sp.  
*Stenoplastis trimacula*, Colombia, WARREN, p. 422, t. c., n. sp.  
*Sterrhia associata*, *obliquiscripta*, *picta*, p. 62, *punctilineata*, p. 63, Natal, WARREN, t. c.; *S. rhodocosma*, S. Australia, LOWER, p. 14, P. Linn. Soc. N. S. Wales, xxii; *S.? baptata*, Apia, WARREN, p. 224, Nov. Zool. iv: n. spp.  
*Stibaroma hemadelphe*, N. S. Wales, LOWER, p. 265, P. Linn. Soc. N. S. Wales, 1897, n. sp.  
*Strophoptila*, n. g., *Sterrhinae*, for *S. informis*, n. sp., Khasia hills, WARREN, p. 225, Nov. Zool. iv.

- Symmacra carnearia*, Borneo, WARREN, p. 63, t. c., n. sp.  
*Syncosmia*, n. g., near *Chloroclystis*, p. 70, for *S. patinata*, n. sp., Khasia hills, p. 71, WARREN, t. c.  
*Syndromodes*, n. g., near *Lasioclora*, for *S. punctilineata, unicolor*, n. spp., S. Africa, WARREN, p. 45, t. c.  
*S. rubridentata*, E. Africa, WARREN, p. 213, t. c., n. sp.  
*Synecta*, n. g., near *Hymenomima*, p. 472, for *S. cuneifascia, griseola*, n. spp., Mapiri, p. 473, WARREN, t. c.  
*Synegia rosearia*, China, LEECH, p. 204, Ann. Nat. Hist. xix, n. sp. [but op. cit. xx, p. 245 is said to be *purpurascens*, Warr.].  
*Synopsia*? *octopunctata*, Natal, WARREN, p. 92, Nov. Zool. iv; *S. austerraria*, China, LEECH, p. 430, Ann. Nat. Hist. xix : n. spp.  
*Syntaracta limitata*, China, WARREN, p. 396, Nov. Zool. iv, n. sp.  
*Syrrhizodes*, n. g., p. 505, *Ennomine*, for *S. deludens*, n. sp., Amazons, p. 506, WARREN, t. c.  
*Syrtodes zofra*, Ecuador, DOGNIN, p. 247, Ann. Soc. ent. Belgique, xli, n. sp.  
*Tachyphyle janeira*, Rio Janeiro, SCHAUS, p. 162, J. N. York Ent. Soc. v, n. sp.  
*Tæniophila*, n. g. for *Acidalia unio*, Oberth. (= *askoldaria*, Christ.), STAUDINGER, p. 21, Deutsche ent. Zeitschr. Lep. x.  
*Tanaostyla*, n. g., *Cylopodine*, for *T. dilucida*, Colombia, p. 422, *unimacula*, Bolivia, p. 423, n. spp., WARREN, Nov. Zool. iv.  
*Tasta chalybeata*, Celebes, WARREN, p. 76, t. c., n. sp.  
*Taxeotis goniogramma*, p. 376, *pelopa*, p. 377, Australia, MEYRICK, Tr. ent. Soc. London, 1897, n. spp.  
*Tephрина deerraria*, Wlk., var. n. *dissocia*, WARREN, p. 112, Nov. Zool. iv.  
*T. antennata*, E. Africa, WARREN, p. 399, t. c.; *T. furcata*, p. 112, *geminata, inconspicua*, p. 113, Natal, WARREN, t. c.; *T. subcurvaria*, W. Africa, MABILLE, p. 228, Ann. Soc. ent. France, 1897; *T. verecundaria*, W. China, LEECH, p. 312, Ann. Nat. Hist. xix : n. sp.  
*Tephrinopsis congener*, Luzon, p. 113, *marmorata*, Natal, p. 114, WARREN, Nov. Zool. iv; *T. semipallida*, Nov. Friborgo, WARREN, p. 483, Nov. Zool. iv : n. sp.  
*Tephroclystia sagittata*, Natal, WARREN, p. 71, Nov. Zool. iv; *T. ruficarpus*, Khasia hills, WARREN, p. 230, t. c.; *T. longicarpus*, Bolivia, *longifimbria*, São Paulo, p. 450, *truncatipennis*, Petropolis, p. 451, WARREN, t. c. : n. spp.  
*Tephronia cremiaria*, mode of hibernation, DEMAISON, p. 295, Bull. Soc. ent. France, 1897.  
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*T. pygmaeria, brunnearia*, China, LEECH, p. 339, Ann. Nat. Hist. xix, n. spp.  
*Terpna ruficolararia*, Borneo, WARREN, p. 32, Nov. Zool. iv; *T. ? ocellata*, Khasia hills, WARREN, p. 207, pl. v, fig. 25, t. c.; *T. subradiata*, Penang, WARREN, p. 388, t. c. : n. spp.  
*Tetracis edmondsi*, var. n. *impunctata*, WARREN, p. 506, t. c.  
*T. rivulata*, Costa Rica, WARREN, l. c., n. sp.  
*Thalassodes nigripunctata*, Cameroons, WARREN, p. 46, t. c.; *T. albifimbria*, Centr. Africa, *flavicosta*, Queensland, WARREN, p. 215, t. c.; *T. viridicaput*, Celebes, WARREN, p. 391, t. c.; *T. parallelaria*, p. 241, *inconcinaria, submacularia*, China, p. 242, LEECH, Ann. Nat. Hist. xx; *T. phrixopa*, Sambawa, MEYRICK, p. 73, Tr. ent. Soc. London, 1897 : n. spp.

- Thalera lacerataria*, figure, pl. i, fig. 4, p. 11, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
- T. tenuilinea*, Korea, ALPHÉRAKY, p. 182, pl. x, fig. 7, Romanoff Mem. ix; *T. sinuosaria*, China, p. 244, *colataria*, Japan and China, p. 245, LEECH, Ann. Nat. Hist. xx : n. spp.
- Thamnonoma angulata*, Jamaica, *ochrifascia*, Bermudas, WARREN, p. 484, Nov. Zool. iv, n. spp.
- Thysanopyga pygaria*, var. n. *ochrilinea*, WARREN, p. 478, t. c.
- T. nigriscticta*, Costa Rica, WARREN, t. c., n. sp.
- Tigridoptera monochrias*, p. 76, *ptochopis*, p. 77, Sangir, MEYRICK, Tr. ent. Soc. London, 1897; *T. radiolata*, Palawan, WARREN, p. 85, Nov. Zool. iv : n. spp.
- Timandra obsoleta*, p. 63, *ruptilinea*, p. 64, Khasia hills, WARREN, t. c., n. spp.
- Traminda nigripuncta*, Liberia, WARREN, p. 225, t. c.; *T. falcata*, Natal, *glauca*, Sierra Leone, p. 64, *rufa*, Natal, p. 65, WARREN, t. c. : n. spp.
- Trichogompha*, n. g., *Palyadina*, type *Fidonia opulenta*, Mieg, WARREN, p. 461, t. c.
- Trichopterigia costipunctaria*, Japan, LEECH, p. 73, Ann. Nat. Hist. xx; *T. nigrisculpta*, Darjiling, WARREN, p. 68, Nov. Zool. iv : n. spp.
- Trichopteryx olivaria*, Japan, LEECH, p. 75, Ann. Nat. Hist. xx, n. sp.
- Trimetopia aetheraria*, Gn., characters, WARREN, p. 233, Nov. Zool. iv.
- Triorisma*, n. g., type *genustexus*, Hmps., WARREN, p. 395, t. c.
- T. ? violacea*, Sikkim, WARREN, p. 226, t. c., n. sp.
- Triphosa andoensis*, Centr. Asia, ALPHÉRAKY, p. 67, Romanoff Mem. ix; *T. corrasata*, Khasia hills, WARREN, p. 73, Nov. Zool. iv : n. spp.
- Triprora*, n. g. for *Hexeris trizonata*, Saalm. (= *Hyposidra linearis*, Warren, supra), WARREN, p. 401, t. c.
- Trisyndeta*, n. g., *Ennominae*, for *T. subpersa*, n. sp., Uganda, WARREN, p. 260, t. c.
- Turckheimeria argentiplaga*, *rubriplaga*, W. Africa, WARREN, p. 243, t. c., n. spp.
- Tycoonina natalensis*, Natal, WARREN, p. 114, t. c., n. sp.
- Utiocnemis delicatior*, Japan, WARREN, p. 391, t. c., n. sp.
- Utirolepis*, n. g., *Enochrominae*, p. 385, for *U. pilosa*, n. sp., Afghanistan, p. 386, WARREN, t. c.
- Urapteryx latimarginaria*, p. 190, *costitrigaria*, p. 191, *similaria*, p. 192, pl. vi, fig. 2, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Venilia disparata*, Amurland, STAUDINGER, pl. ii, fig. 27, p. 39, Deutsche ent. Zeitschr. Lep. x; *V. flavaria*, China, pl. vi, fig. 12, *V. ? invenustaria*, Korea, p. 233, LEECH, Ann. Nat. Hist. xix : n. spp.
- Venusia undularia*, China, LEECH, p. 83, t. c., n. sp.
- Victoria*, n. g., *Geometrinae*, for *V. albipicta*, n. sp., S. Africa, WARREN, p. 46, Nov. Zool. iv.
- Xandrames sericea*, *latiferaria*, distinguished, LEECH, p. 326, Ann. Nat. Hist. xix.
- X. angustaria*, China, *id. t. c.*, p. 327, n. sp.
- Xantheliodes*, n. g., *Orthostixinae*, p. 30, for *X. uniformis*, n. sp., Zomba, p. 31, WARREN, Nov. Zool. iv.
- Xanthomima*, n. g., near *Tigridoptera*, for *X. seminigra*, n. sp., Kei Toal, WARREN, p. 86, t. c.
- X. cyanoxantha pallida*, subsp. n., WARREN, p. 243, t. c.
- Xanthorrhoe dissociata*, p. 73, with varr. *nigrimedia*, *ruptifascia*, Luzon, everetti, Borneo, p. 74, WARREN, t. c.; *X. picticolor*, Jamaica, WARREN, p. 456, t. c.; *X. lophogramma*, New Zealand, MEYRICK, p. 386, Tr. ent. Soc. London, 1897 : n. spp.
- Xenochlorodes*, n. g., *Geometrinae*, for *X. pallida*, n. sp., Beirut, WARREN, p. 47, Nov. Zool. iv.

- Xenoecista*, n. g., near *Semiothisa*, for *X. pallidata*, S. America, p. 484, *subdiversa*, Bogota, *triconjuncta*, Petropolis, p. 485, n. spp., WARREN, t. c.
- Xenographia manifesta*, Khasia hills, WARREN, p. 402, t. c., n. sp.
- Xenoprora*, n. g., *Sterrhinae*, for *X. parallela*, n. sp., Lifu, WARREN, p. 226, t. c.
- Xylolocha linearis*, Bolivia, WARREN, p. 507, t. c., n. sp.
- Xyloscia biangularia*, China, LEECH, p. 210, pl. vi, fig. 5, Ann. Nat. Hist. xix, n. sp.
- Zamarada auratisquama*, *flavicosta*, *nasuta*, p. 122, *protrusa*, *undimarginata*, *vulpina*, p. 123, Niger, WARREN, Nov. Zool. iv; *Z. ansorgei*, E. Africa, *latimargo*, Congo, WARREN, p. 261, t. c. : n. spp.
- Zanclopera straminearia*, China, LEECH, p. 306, Ann. Nat. Hist. xix, n. sp.
- Zanclopteryx floccosa*, Berg-en-Daal, *subsimilis*, Venezuela, p. 418, *venata*, Amazons, p. 419, WARREN, Nov. Zool. iv, n. spp.
- Zethenia contiguaria*, China, LEECH, p. 223, Ann. Nat. Hist. xix, n. sp.
- Ziridava xylinaria subrubida*, subsp. n., WARREN, p. 71, Nov. Zool. iv.
- Zomia innotata*, Penang, WARREN, p. 402, t. c., n. sp.
- Zonosoma quercimontaria*, Germany, BASTELBERGER, p. 120, metamorphoses, p. 220, Ent. Zeit. Stettin, lviii, n. sp.

### PYRALIDÆ, &c. (incl. THYRIDIDÆ).

- [Cf. DISTANT (250), DOGNIN (259), GENTHE (396), HAMPSON (451, 452, 453), HOFMANN (489), KALCHBERG (561), LATASTE (654), LOWER (691), MATSUMURA (725), MEYRICK (748, 749), MURTFELDT (777), PAGENSTECHER (817), SWINHOE (1067), WARREN (1149-1152).]
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- Chrysauginæ*: classification and revision, HAMPSON, pp. 633-692, P. Zool. Soc. London, 1897.
- Hydrocampinæ* and *Scopariinæ*, classification and revision of, HAMPSON, pp. 127-240, Tr. ent. Soc. London, 1897. The synonymy of this and the following memoirs is not transferred to our pages.
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- Actenia beatalis*, Syria, KALCHBERG, p. 183, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Addea rectisetæ*, Amboyna, WARREN, p. 19, Nov. Zool. iv, n. sp.
- Ambia oculalis*, Australia, *picalis*, Brazil, p. 160, *tenella*, Peru, *rhabdotalis*, p. 161, *interstrigalis*, *atristrigalis*, p. 162, Amboyna, *semilunalis*, Brazil, *fulvitinctalis*, Peru, p. 163, *trichostylalis*, Celebes, p. 164, *aulacophora*, Fergusson island, *albomaculalis*, W. Africa, *tigridalis*, Pulo Laut, p. 165, *metalophota*, Jamaica, *cataclystalis*, Pulo Laut, p. 166, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Angenora subochracea*, Natal, WARREN, p. 125, Nov. Zool. iv, n. sp.
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- Aporodes escherichi*, p. 234, *nepticulalis*, p. 236, Asia Minor, HOFMANN, Deutsche ent. Zeitschr. Lep. x, n. spp.
- Argyrectis*, n. g., p. 135, *Hydrocampinæ*, for *A. argentilinealis*, Brazil, *niphoplagiatis*, Dominica, p. 136, n. spp., HAMPSON, Tr. ent. Soc. London, 1897.
- Aripana macrotis*, Talaut, MEYRICK, p. 87, Tr. ent. Soc. London, 1897, n. sp.
- Arta seriulæ*, Brazil, HAMPSON, p. 669, P. Zool. Soc. London, 1897, n. sp.

- Arxama atralis*, Malay penins., HAMPSON, p. 138, Tr. ent. Soc. London, 1897, n. sp.
- Aulacodes trichoceralis*, *neptopis*, New Guinea, p. 174, *parapomasalis*, Flores, p. 175, *sinensis*, Omei Shan, p. 176, *acroperalis*, *diopsalis*, p. 177, *brunnealis*, *cervinalis*, *junctiscriptalis*, p. 178, New Guinea, *convoluta*, *semicircularis*, Amazons, p. 180, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
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- B. præusta*, Batchian, *bifimbriata*, Khasia hills, *seriata*, E. Africa, WARREN, p. 20, t. c.; *B. albifimbriata*, Java, pl. v, fig. 27, *B. ? dohertyi*, Bali, fig. 28, p. 196, *B. mediostrigata*, Khasia hills, p. 197, WARREN, t. c.; *B. angustifascia*, Amboyna, p. 378, *interalbicans*, Borneo, *pernitescens*, Celebes, p. 379, *ramifera*, New Guinea, p. 380, WARREN, t. c. : n. spp.
- Botys olivialis*, varr. n. *transbaicalis caucasica*, STAUDINGER, p. 343, Deutsche ent. Zeitschr. Lep. x.
- B. rocinalis*, Ecuador, DOGNIN, p. 249, Ann. Soc. ent. Belgique, xli, n. sp.
- Bradina remipes*, Pulo Laut, p. 199, *leucura*, Fiji, p. 200, *perlucidalis*, Marquesas, p. 201, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Callinaia flavimargo*, Natal, WARREN, p. 129, Nov. Zool. iv, n. sp.
- Canarsia hammondi*, habits, WEED (1178), pp. 113-115.
- Canuza acnias*, Sydney, MEYRICK, p. 379, Tr. ent. Soc. London, 1897, n. sp.
- Caphys pallida*, p. 678, *fovealis*, p. 679, São Paulo, HAMPSON, P. Zool. Soc. London, 1897, n. spp.
- Carcha violalis*, Espirito Santo, HAMPSON, p. 654, t. c., n. sp.
- Cataclysta tessellalis*, Brazil, p. 149, *fulvicinctalis*, Jamaica, *pavionalis*, Peru, p. 150, *constellalis*, *subornata*, Brazil, p. 151, *albipunctalis*, Madagascar, *pervenustalis*, Accra, p. 152, *albidentata*, Java, p. 153, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
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- Cliniodes rubialalis*, Ecuador, DOGNIN, p. 249, Ann. Soc. ent. Belgique, xli, n. sp.
- Clupeosoma basale*, Barbados, p. 218, *metachryson*, New Guinea, p. 219, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Cnaphalocrocis marginalis*, Borneo, PAGENSTECHER, p. 462, pl. xix, fig. 8, Abh. Senckenb. Ges. xxiii, n. sp.
- Calorhynchidia trifidalis*, Amboina, HAMPSON, p. 205, Tr. ent. Soc. London, 1897, n. sp.
- Condylolomia metapachys*, Brazil, HAMPSON, p. 673, P. Zool. Soc. London, 1897, n. sp.
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- Coptobasis mesospectralis*, Pulo Laut, etc., HAMPSON, p. 203, Tr. ent. Soc. London, 1897, n. sp.
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- Crocodypora enospora*, New Zealand, MEYRICK, p. 388, Tr. ent. Soc. London, 1897, n. sp.
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- Diatrea saccharalis*, its introduction to the Mascarene islands, BORDAGE, p. 1109, C.R. Ac. Paris, cxxv.
- Dichocrocis tyrannhes*, Sangir, MEYRICK, p. 89, Tr. ent. Soc. London, 1897, n. sp.
- Diloia*, n. g., p. 670, *Chrysauginae*, for *D. ochriplaga*, n. sp., Rio Janeiro, p. 671, HAMPSON, P. Zool. Soc. London, 1897.

- Diplopseustis metallias*, Sangir, MEYRICK, p. 90, Tr. ent. Soc. London, 1897, n. sp.
- Diptychia*, n. g., *Siculodidae*, for *D. rhodotania*, n. sp., Madagascar, MABILLE, p. 226, Ann. Soc. ent. France, 1897.
- Diptychophora microzantha*, Melbourne, MEYRICK, p. 380, Tr. ent. Soc. London, 1897, n. sp.
- Dracænura prosthénialis*, New Guinea, *leucoprocta*, New Hebrides, p. 193, *cincticorpus*, Loyalty islands, *tagiadialis*, *albonigralis*, New Guinea, p. 194, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Endotricha brunnea*, Natal, WARREN, p. 129, Nov. Zool. iv, n. sp.
- Ephesia cahiritella*, habits, larva, CHITTENDEN, p. 7, Bull. Dép. Agric. Ent. viii.
- Epitamyræ birectalis*, Santa Lucia, HAMPSON, p. 686, P. Zool. Soc. London, 1897, n. sp.
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- Harpagoneura acrocausta*, Sangir, MEYRICK, p. 79, t. c., n. sp.
- Hyalosticta*, n. g., *Chrysauginæ*, for *H. obliquialis*, n. sp., São Paulo, HAMPSON, p. 656, P. Zool. Soc. London, 1897.
- Hypolamprus pallesceus*, Mysol and Australia, p. 614, *peratopsis*, Borneo, etc., p. 615, HAMPSON, P. Zool. Soc. London, 1897; *H. bipunctatus*, Java, WARREN, p. 198, Nov. Zool. iv; *H. leopardata*, Queensland, *subnititans*, Penang, p. 380, *unicolor*, Timor, p. 381, WARREN, t. c. : n. spp.
- Hypsopygia sanguinalis*, Natal, WARREN, p. 125, t. c., n. sp.
- Iza quinquelineata*, Colombia, *subtransversalis*, Surinam, p. 408, *triangulifera*, Petropolis, p. 409, WARREN, t. c., n. spp.
- Laetilia coccidivora*, var. n. *hulstii*, COCKERELL, p. 588, Amer. Natural. 1897.
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- Leucochroma? cecinalis*, Ecuador, DOGNIN, p. 248, Ann. Soc. ent. Belgique, xli, n. sp.
- Lophopleura eurzonalis*, Amazons, HAMPSON, p. 690, P. Zool. Soc. London, 1897, n. sp.
- Luma macropsalis*, New Guinea, p. 186, *albifascialis*, Jamaica, *trimaculata*, Pulo Laut, p. 187, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Lygropis impunctata*, Natal, WARREN, p. 129, Nov. Zool. iv, n. sp.
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- Margarodes pradotalis*, Ecuador, DOGNIN, p. 248, Ann. Soc. ent. Belgique, xli, n. sp.
- Margarosticha leucozonalis*, Fergusson Is., HAMPSON, p. 147, Tr. ent. Soc. London, 1897, n. sp.
- Melissoblastes hilaropsis*, Brisbane, MEYRICK, p. 378, Tr. ent. Soc. London, 1897, n. sp.
- Meskea nigra*, Amazons, WARREN, p. 410, Nov. Zool. iv, n. sp.
- Metallarcha zygozema*, S. Australia, LOWER, p. 18, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Micraglossa aenealis*, Khasia hills, HAMPSON, p. 224, Tr. ent. Soc. London, 1897, n. sp.
- Microzancle*, n. g., p. 667, *Chrysauginæ*, for *M. ignitalis*, n. sp., Brazil, p. 668, HAMPSON, P. Zool. Soc. London, 1897.

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- Noctuomorpha normalis*, var. n. *ancyrensis*, HOFMANN, p. 236, Deutsche ent. Zeitschr. Lep. x.
- Nymphula leucoplaca*, Sangir, MEYRICK, p. 85, Tr. ent. Soc. London, 1897; *N. dentilinea*, Florida, p. 139, *lanceolalis*, Brazil, p. 140, *sinicalis*, China, p. 141, *dentizonalis*, Queensland, *perlalis*, Peru, p. 143, *seriopunctalis*, Amboina, *pleonaxalis*, N. Guinea, p. 144, HAMPSON, Tr. ent. Soc. London, 1897 : n. spp.
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- Parachma lutealis*, *meterythra*, Brazil, HAMPSON, p. 659, P. Zool. Soc. London, 1897, n. spp.
- Parthenodes ectargyralis*, New Guinea, p. 182, *mediocinctalis*, Rio Janeiro, p. 183, *angularis*, Madagascar, p. 184, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Peucela zonalis*, Natal, WARREN, p. 126, Nov. Zool. iv, n. sp.
- Phakellura?* *tiricialis*, Ecuador, DOGNIN, p. 248, Ann. Soc. ent. Belgique, xli, n. sp.
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- Phycis interpunctella*, attacking man, LATASTE (654). *P. indigenella*, habits, WEED (1178), pp. 105-109.
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- Pionidia*, n. g. for *P. albicilia*, n. sp., Rio Janeiro, HAMPSON, p. 664, P. Zool. Soc. London, 1897.
- Placosaris*, n. g., *Pyraustide*, for *P. leucula*, n. sp., Sangir, MEYRICK, p. 89, Tr. ent. Soc. London, 1897.
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- Protrichia*, n. g., *Chrysauginae*, p. 661, for *P. vinacea*, n. sp., Brazil, p. 662, HAMPSON, P. Zool. Soc. London, 1897.
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- Pygospila evanidalis*, figure, pl. vi, figg. 4 & 4a, *P. tyres*, fig. 5 (= *cuprealis*, Hamps.), p. 146, SNELLEN, Tijdschr. Ent. xl.
- Pyralis dissimulans*, Natal, WARREN, p. 126, Nov. Zool. iv, n. sp.
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- R. stenosoma*, Ceylon, p. 617, *polystictalis*, Mysol, p. 618, *micragraphalis*, Sierra Leone, p. 619, *trigoniphora*, Brazil, p. 620, *atomosalis*, Java, p. 621, *latizonalis*, Sierra Leone, p. 622, *elongatalis*, Malay penins., p. 623, *margaritalis*, Madagascar, p. 624, *citrina*, Pulo Laut, p. 625, HAMPSON, P. Zool. Soc. London, 1897, n. spp.
- Sarciotis*, n. g., p. 669, for *S. medialis*, n. sp., Brazil, p. 670, HAMPSON, P. Zool. Soc. London, 1897.
- Scoparia oxygona*, S. Australia, MEYRICK, p. 381, Tr. ent. Soc. London, 1897; *S. lichenopa*, N. S. Wales, LOWER, p. 18, P. Linn. Soc. N. S. Wales, xxii; *S. glauculalis*, Falkland islands, *atropicta*, United States, *barbipennis*, Malay penins., p. 238, HAMPSON, Tr. ent. Soc. London, 1897 : n. spp.
- Scotomera tripartita*, Natal, WARREN, p. 127, Nov. Zool. iv, n. sp.
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- S. astrodora*, Talant, MEYRICK, p. 91, Tr. ent. Soc. London, 1897; *S. complicatalis*, Perak, WARREN, p. 198, Nov. Zool. iv : n. spp.
- Sisyrphophora cirralis*, South Borneo, SWINHOE, p. 170, Ann. Nat. Hist. xix, n. sp.
- Sphalerosticha*, n. g., *Pyralinæ*, for *S. oblunata*, n. sp., Natal, WARREN, p. 127, Nov. Zool. iv.
- Sphinctocera*, n. g., *Pyralinæ*, for *S. crassisquama*, n. sp., Natal, WARREN, p. 128, t. c.
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- Strepsinoma ectopalis*, New Guinea, HAMPSON, p. 190, Tr. ent. Soc. London, 1897, n. sp.
- Striglina glareola*, Feld. (= *decussata*, and *duplicifimbria*), HAMPSON, p. 289, J. Bombay Soc. xi.
- S. fixseni*, Korea, ALPHÉRAKY, p. 167, pl. xi, fig. 10, Romanoff Mem. ix; *S. derasata*, Borneo and Fergusson island, WARREN, p. 382, Nov. Zool. iv; *S. xanthopera*, Rio Janeiro, HAMPSON, p. 612, P. Zool. Soc. London, 1897 : n. spp.
- Syllepsis serosalis*, Ecuador, DOGNIN, p. 250, Ann. Soc. ent. Belgique, xli, n. sp.
- Symphleps*, n. g., *Thyrididæ*, for *S. atomosalis*, n. sp., Great Kei island, WARREN, p. 383, Nov. Zool. iv.
- Talis diacentra*, p. 379, *enchias*, p. 380, Victoria, MEYRICK, Tr. ent. Soc. London, 1897, n. spp.
- Tamyra cuprina*, Guadaloupe, HAMPSON, p. 647, P. Zool. Soc. London, 1897, n. sp.
- Tatobotys albivenalis*, Bonin island, *aurantialis*, Batchian, HAMPSON, p. 197, Tr. ent. Soc. London, 1897, n. spp.
- Tetrascistis*, n. g., *Chrysauginæ*, for *T. tinctalis*, n. sp., São Paulo, HAMPSON, p. 679, P. Zool. Soc. London, 1897.
- Thalamarchis*, n. g., p. 80, *Crambidæ*, for *T. chalcorma*, n. sp., Sangir, p. 81, MEYRICK, Tr. ent. Soc. London, 1897.
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- T. helianthiales*, early stages, DYAR, p. 217, Canad. Ent. xxix.  
*Tosale aucta*, Brazil, HAMPSON, p. 652, P. Zool. Soc. London, 1897, n. sp.  
*Xantippe chromalis*, São Paulo, HAMPSON, p. 658, t. c., n. sp.  
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## TORTRICIDÆ.

[Cf. GENTHE (396), HOFMANN (489), KALCHBERG (561), MEYRICK (749), WALSINGHAM (1139, 1140), WALSINGHAM & DURRANT (1142).]

Economic importance of *Microlepidoptera*, BORGMANN (112).

Trophii of numerous species, GENTHE (396).

*Ancylis argenticiliana*, Congo, WALSINGHAM, p. 57, pl. iii, fig. 22, Tr. ent. Soc. London, 1897, n. sp.

*Arotrophora ombrodelta*, early stages, FROGGATT, p. 719, pl., Agric. Gaz. N. S. W., 1897.

*Autographus*, n. g., subfam. n., *Carposinae*, p. 59, for *A. luteus*, n. sp., Congo, p. 60, pl. ii, fig. 10, WALSINGHAM, Tr. ent. Soc. London, 1897.

*Balbis*, n. g., type *Carpocapsa assumptana*, Wkr., WALSINGHAM, p. 128, P. Zool. Soc. London, 1897.

*Cacæcia torogramma*, New Zealand, MEYRICK, p. 388, Tr. ent. Soc. London, 1897, n. sp.

*Captotria ulicetana*, albino, BANKES, p. 63, Ent. Mag. xxxiii.

*Carpocapsa saltitans*, notes, REBEL, p. 111, Verh. Ges. Wien, 1897, VETH, Tijdschr. Ent. xl, Verslag, p. 24; SCHULTZ, p. 10, Illustr. Wochenschr. ii. Larva and pupa noticed, HOGG, pp. 309-312, Int. J. Micr. vii.

*Carposinae*, subfam. n., cf. *Autographus* supra.

*Celostathma parallelana*, St. Thomas, WALSINGHAM, p. 136, P. Zool. Soc. London, 1897, n. sp.

*Conchylis langeana*, Syria, KALCHBERG, p. 188, Deutsche ent. Zeitschr. Lep. x, n. sp.

*Cydia*: application of the name, WALSINGHAM, p. 130, P. Zool. Soc. London, 1897.

*C. ? flavicollis*, St. Thomas, *id. l. c.*; *C. ? prætectana*, Congo, WALSINGHAM, p. 58, pl. iii, fig. 24, Tr. ent. Soc. London, 1897: n. spp.

*Dichrorampha senectana*, albino, BANKES, p. 15, Ent. Mag. xxxiii. *D. petiverella*, var. BANKES, p. 44, t. c.

*Eccopsis præcedens*, Congo, WALSINGHAM, p. 56, pl. iii, fig. 21, Tr. ent. Soc. London, 1897, n. sp.

*Enarmonia jamaicana*, Jamaica, WALSINGHAM, p. 122, P. Zool. Soc. London, 1897, n. sp.

*Episimus*: definition augmented, WALSINGHAM, p. 122, t. c.

*E. nesiotæ*, p. 123, *submicans*, p. 124, West Indies, WALSINGHAM, t. c., n. spp.

*Euscelis ? lustrmarginata*, St. Croix, WALSINGHAM, p. 130, t. c., n. sp.

*Grapholitha leucogrammana*, Asia Minor, HOFMANN, p. 237, Deutsche ent. Zeitschr. Lep. x, n. sp.

*Laspeyresia hemispherana*, W. Africa, WALSINGHAM, p. 58, pl. iii, fig. 23, Tr. ent. Soc. London, 1897, n. sp.

*Oxygrapha negans*, p. 131, *monochroma*, *rotundipennis*, p. 132, West Indies, WALSINGHAM, P. Zool. Soc. London, 1897, n. spp.

*Phalonia ichthyochroa*, p. 136, *subolivacea*, *distigmatana*, p. 137, West Indies, WALSINGHAM, t. c., n. spp.

*Platynota breviplicana*, *diminutana*, Grenada, WALSINGHAM, p. 135, t. c., n. spp.

*Sciaphila osseana*, var. *niveosana*, Pack., note, SOMMER, p. 400, Deutsche ent. Zeitschr. Lep. x.

*Stigmonota dorsana*, var. BANKES, p. 43, Ent. Mag. xxxiii.

*Thiodia autochthonos*, W. Indies, WALSINGHAM, p. 126, P. Zool. Soc. London, 1897, n. sp.

*Thyralia*, n. g., type *Conchylis bunteana*, Rbs., WALSINGHAM, p. 138, t. c.

*Tortrix*: *viridana* is undoubtedly the type, WALSINGHAM & DURRANT, p. 39, Ent. Mag. xxxiii. *T. grotiana*, early stages, CHRÉTIEN, p. 258, Natural. 1897.

### TINEIDÆ.

[The titles indicated by the following names and numbers refer to *Tineidæ*, viz.:—CHAPMAN (166), GENTHE (396), HOFMANN (487, 488, 489), HÖFNER (490), JOANNIS (553), LOWER (691, 692, 693), MEYRICK, (747, 749), SLINGERLAND (1022), SNELLEN (1040), TURNER (1100), WALSINGHAM (1139, 1140, 1141), WALSINGHAM & DURRANT (1142), WERNICKE (1184).]

The Australian *Elachistidæ* monographed by MEYRICK, 254 species, P. Linn. Soc. N. S. Wales, 1897, pp. 297–435.

Catalogue of Victorian *Heterocera*, pts. xxii, xxvi, LOWER, Victorian Natural. xiii & xiv.

Trophs of numerous species, GENTHE (396).

Habits of a few N. American, WEED (1178), pp. 119–134.

Note on large larva in Ants'-nests in Madagascar, WASMANN, p. 259, Deutsche ent. Zeitschr. 1897.

*Acompia angulifera*, West Indies, WALSINGHAM, p. 82, P. Zool. Soc. London, 1897, n. sp.

*Æoloscelis*, n. g., near *Stathmopoda*, p. 326, for *Æ. ætheria*, *hydrographa*, p. 327, *isoclera*, *chrysophenicea*, *hipparcha*, p. 328, *sphuragidota*, p. 329, n. spp., Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897.

*Æraula*, n. g., p. 369, *Elachistidæ*, for *Æ. diotis*, n. sp., W. Australia, p. 370, MEYRICK, t. c.

*Agriophara poliopepla*, *leucanthes*, p. 31, *plagiosema*, Queensland, *discobola*, Victoria, p. 32, TURNER, Ann. Queensl. Mus. No. 4, n. spp.

*Anacampsis aurimaculella*, Carinthia, HÖFNER, p. 170, Jahrb. Mus. Karnten, xxi; *A. plumbeolata*, *cornifer*, p. 79, *mangelivora*, *quinquepunctella*, p. 80, *lapidella*, *insularis*, p. 81, West Indies, WALSINGHAM, P. Zool. Soc. London, 1897 : n. spp.

*Anadasmus*, n. g., type *Cryptolechia soraria*, Z. *A. sub Pyralis*, *albana*, F. (= *tenera*, Z.), WALSINGHAM, p. 100, t. c.

*Anaphora triatomella*, St. Thomas, WALSINGHAM, p. 172, t. c., n. sp.

*Anarsia dryinopa*, *A. ? holomela*, Australia, LOWER, p. 57, Tr. R. Soc. S. Austral. xxi, n. spp.

*Antæotricha*, *walchiana*, Cr. & S. (= *lativittella*, Wkr.), WALSINGHAM, p. 99, P. Zool. Soc. London, 1897.

*A. suffumigata*, Grenada, id. t. c., p. 98, n. sp.

*Anybia piperatella*, p. 107, *tripunctata*, *metallifera*, p. 108, West Indies, WALSINGHAM, t. c., n. spp.

*Aprocerema*, n. n. for *Anacampsis*, Stgr., DURRANT, p. 221, Ent. Mag. xxxiii.

*Arignota*, n. g. for *Xylorycta stercorata*, Luc., TURNER, p. 21, Ann. Queensl. Mus. No. 4.

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- Atheropla cremnopelta*, Victoria, LOWER, p. 269, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Atopocera*, n. g., *Anaphorina*, for *A. occultum*, n. sp., Hayti, WALSINGHAM, p. 169, P. Zool. Soc. London, 1897.
- Auximobasis insularis, variolata*, p. 94, *brevipalpella, flaviciliata*, p. 95, *constans*, p. 96, West Indies, WALSINGHAM, t. c., n. spp.
- Batrachedra velox*, p. 302, *metaxias*, Tasmania, *microtoma*, p. 303, *sterilis, mylephata, eremochtha*, p. 304, *helarcha*, Australia, *dirota*, Tasmania, p. 305, *holochlora, hypachroa, volucris*, p. 306, *phorcydia, leucophyta, astathma*, p. 307, *megalodoxa, liopia, hypoxutha, eustola*, p. 308, *trimeris, epixantha, plagiocentra*, p. 309, Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897; *B. stigmatophora*, p. 104, *tarsimaculata*, p. 105, West Indies, WALSINGHAM, P. Zool. Soc. London, 1897 : n. spp.
- Blastobasis argillacea*, p. 91, *grenadensis, subolivacea*, p. 92, *triangularis, gracilis*, p. 93, West Indies, WALSINGHAM, t. c., n. spp.
- Brachmia? fulvidella*, St. Thomas, WALSINGHAM, p. 62, t. c., n. sp.
- Bucculatrix artemisiae*, food-plants, KNAGGS, p. 88, Ent. Mag. xxxiii.
- B. flexuosa, unipuncta*, St. Thomas, WALSINGHAM, p. 144, P. Zool. Soc. London, 1897, n. spp.
- Butalis braschiella*, Potsdam, HOFMANN, p. 241, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Cæsya argyraspis*, Queensland, LOWER, p. 54, Tr. R. Soc. S. Austral. xxi; *C. habropis*, Queensland, p. 20, *grammophora*, Victoria, p. 21, LOWER, P. Linn. Soc. N. S. Wales, xxii; *C. hemidesma*, Victoria, LOWER, p. 268, t. c. : n. spp.
- Choreutis octogemmifera*, W. Africa, WALSINGHAM, p. 52, pl. iii, fig. 18, Tr. ent. Soc. London, 1897.
- Cleodora eumela*, Victoria, LOWER, p. 59, Tr. R. Soc. S. Austral. xxi, n. sp.
- Coleophora auricella, wockella, lineolea*, larval habits, BROWN, pp. xxi, xxii, C.R. Soc. Bordeaux, 1896. *C. malivorella*, natural history, SLINGERLAND (1922).
- C. pulchricornis, picticornis*, West Indies, WALSINGHAM, p. 102, P. Zool. Soc. London, 1897, n. spp.
- Colopteryx*, n. g. (? near *Lita*), for *C. conchylidella*, n. sp., Asia Minor, HOFMANN, p. 239, Deutsche ent. Zeitschr. Lep. x.
- Compsoctena media*, Congo, WALSINGHAM, p. 63, pl. iii, fig. 25, Tr. ent. Soc. London, 1897, n. sp.
- Compsochema*, n. g., *Lyonetianae*, for *C. bimarginellum*, n. sp., St. Thomas, WALSINGHAM, P. Zool. Soc. London, 1897.
- Compsoptropa habrodelia*, Victoria, LOWER, p. 20, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Copidostola (?) orthotis*, Sydney, LOWER, p. 273, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Coptodisca rhizophora*, St. Thomas, WALSINGHAM, p. 143, P. Zool. Soc. London, 1897, n. sp.
- Coracisis*, n. g., *Elachistida*, for *C. erythrocosma*, n. sp., Melbourne, MEYRICK, p. 370, P. Linn. Soc. N. S. Wales, 1897.
- Coriscia albomarginatum, attenuatum*, West Indies, WALSINGHAM, p. 154, P. Zool. Soc. London, 1897, n. spp.
- Corythangela*, n. g., p. 299, *Elachistida*, for *C. galeata*, n. sp., Sydney, p. 300, MEYRICK, P. Linn. Soc. N. S. Wales, 1897.
- Cosmopteryx attenuatella*, Wlk. (= *lespedeze*, Wism.), WALSINGHAM, P. Zool. Soc. London, 1897.
- C. pallifasciella*, p. 138, pl. vi, fig. 1, *pustulatella*, p. 139, fig. 2, Java, SNELLEN, Tijdschr. Ent. xl; *C. mystica*, p. 338, *mimetis, macrula*, p. 339, *heliactis, epizona*, p. 340, Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897; *C. similis, abnormalis*, West Indies, WALSINGHAM, P. Zool. Soc. London, 1897 : n. spp.

- Cryptophaga nephrosema*, p. 7, *acroleuca*, p. 8, *eumorpha*, *chionodes*, *nigricincta*, p. 9, Queensland, TURNER, Ann. Queensl. Mus. No. 4, n. spp.
- Cuphodes*, n. g., near *Stathmopoda*, for *C. thysanota*, n. sp., Queensland, MEYRICK, p. 314, P. Linn. Soc. N. S. Wales, 1897.
- Cycloplasis basiplagata*, St. Thomas, WALSINGHAM, p. 143, P. Zool. Soc. London, 1897, n. sp.
- Dendroneura simplex*, San Domingo, WALSINGHAM, p. 141, P. Zool. Soc. London, 1897, n. sp.
- Depressaria pulcherrima*, larva and pupa, BANKES, p. 26, Ent. Mag. xxxiii.
- Dialectica*, n. g., p. 150, type *Gracilaria scalarisella*, Z., with *D. sanctæ-crucis*, *rendalli*, p. 151, *permixtella*, p. 152, n. spp., West Indies, WALSINGHAM, P. Zool. Soc. London, 1897.
- Ditrigonophora*, n. g., p. 117, *Glyphipterygina*, for *D. marmoreipennis*, n. sp., Grenada, p. 118, WALSINGHAM, t. c.
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- T. ? pallidicostella*, Jamaica, *id. t. c.*, p. 115, n. sp.
- Trichotapha tegulella*, Grenada, WALSINGHAM, p. 83, P. Zool. Soc. London, 1897, n. sp.
- Urucha borealis*, Queensland, TURNER, p. 28, Ann. Queensland Mus. No. 4, n. sp.
- Xylesthia australis*, Hayti, WALSINGHAM, p. 166, P. Zool. Soc. London, 1897. n. sp.

- Xylorycta molybdina*, *neomorpha*, *tapeina*, p. 13, *melaleuca*, p. 14, Queensland, TURNER, Ann. Queensland Mus. No. 4; *X. chrysomela*, Queensland, LOWER, p. 270, P. Linn. Soc. N. S. Wales, 1897, n. spp.  
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## PTEROPHORIDÆ and ORNEODIDÆ.

- [Cf. GENTHE (396), WALSINGHAM (1139, 1140), WALSINGHAM & DURRANT (1142), WERNICKE (1184).]  
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*Platyptilia tesseradactyla*, food-plants, BARRETT, p. 62, Ent. Mag. xxxiii.  
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*Sphenarches caffer*, Z. = (*P. diffusalis*, Walk.), WALSINGHAM, p. 56, t. c.  
*Stenoptilia tenuis*, F. & R. = (*gilvidorsis*, Z.), WALSINGHAM, p. 59, t. c.

## (D.) DIPTERA.

[The titles indicated by the following names and numbers refer to *Diptera*, viz. :—ADENSAMER (7), BECKER (59, 60), BENGTSOON (66), BEZZI & DE-STEFANI (75), BLANCHARD (82), BROWN (136), BRÜEL (137), CALL (153), CHITTENDEN (170), COQUILLETT (218), CORTI (219), DAHL (227), FELT (330), FROGGATT (373), GIRSCHNER (413, 414), HOWARD (510), HUNTER (519), JOHNSON (554), KAHL (560), KERTÉSZ (572, 573), KIEFFER (577), KINCAID (581), KUNTZE (645), LALLIER (647), MARCHAL (707, 708, 711), MEADE (733, 734, 735), MEUNIER (740, 742, 743), MIALI & SHELFORD (750), MIK (751-754), OSTEN SACKEN (808-811), PANTEL (819, 820), PATTON (821), PETIT (832), PRATT (881), RAINBOW (892), RODZIANKO (941), SCHNEIDEMÜHL (972), SHARP (1009), SINTENIS (1015, 1016), SLINGERLAND (1023, 1025), STEIN (1057, 1058, 1059), STEINHEIL (1060), STROBL (1065), THALHAMMER (1070), TOWNSEND (1085-1090), TUBEUF (1099), VOSSELER (1137), WANDOLLECK (1143-1147), WHEELER (1186), WILLISTON (1193), WULP (416, 1196, 1197).]

Classification of the *Brachycera*, with 3 new superfamilies, *Tromoptera*, *Energopoda*, and *Mydaïdæ*, to form with *Eremochaeta* the suborder *Orthorrhapha Brachycera*; OSTEN SACKEN (810).

Phylogeny of the divisions, morphology of trophi, etc.; BENGTSOON (66).  
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The use of the terms *alula*, *calyptra*, etc.; MEADE (733), SHARP (1009).

The parts at the base of the wing, comparative anatomy; GIRSCHNER (413).

Anatomy and development of sexual passages and copulatory organs in *Calliphora erythrocephala*; BRÜEL (137).

Brief note on flies with peculiar head and scutellum; WANDOLLECK (1147).  
*Diptera* in the alimentary canal of man; LALLIER (647).

## CECIDOMYIIDÆ.

Parasites of the Hessian fly; ASHMEAD (34).

Antennal setæ and filaments in *Diplosis*; FELT, Psyche, viii, pp. 3-5, pl. i.

Discussion of Rübsaamen's views as to arched filaments, etc.; KIEFFER, (579).

Galls on *Scrophularia chrysanthemifolia*; MIK, p. 293, Wien. ent. Zeit. xvi; on *Ulmus campestris*, id. t. c., p. 294; on *Kochia prostrata*, id. t. c., pp. 294-296, pl. iv.

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*Cecidomyia destructor*, *avenæ*, habits, generations, parasites, MARCHAL (707).  
*C. kellneri*, galls, TUBEUF (1069). *C. pseudococcus*, the "houses" of, MIK, pp. 288-290, Wien. ent. Zeit. xvi. *C. baccarum*, Wachtl, and *hypogæa*, Löw., referred to *Rhopalomyia*, KIEFFER, p. 261, Bull. Soc. ent. France, 1897.

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*Plagiotrochus kiefferi*, N. Africa, MARCHAL, p. 20, Mem. Soc. zool. France, x, n. sp.

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- Mouth and method of suction of *Tabanus*, STEINHEIL (1060).  
*Chrysops costatus*, description, TOWNSEND, p. 18, Ann. Nat. Hist. xix.  
*C. ceras*, p. 38, *facialis*, p. 39, New Mexico, TOWNSEND, Psyche, viii, n. spp.  
*Dicrania cervus*, male, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 276.  
*Hadrus lepidotus*, description, TOWNSEND, p. 19, Ann. Nat. Hist. xix.  
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*T. gilanus*, p. 92, *intensivus*, p. 93, New Mexico, TOWNSEND, Psyche, viii;  
*T. campechianus*, p. 197, *yucatanus*, p. 198, Centr. America, TOWNSEND,  
 Canad. Ent. xxix : n. spp.

## NEMESTRINIDÆ, BOMBYLIIDÆ and CYRTIDÆ.

- Acrocera* and *Paracrocera*: instability of nervuration; *Paracrocera*, superfluuous, OSTEN SACKEN, pp. 323-326, Berlin. ent. Zeitschr. 1896.  
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*Atriadops*, n. n. for *Colax*, Wied., WANDOLLECK, p. 245, Ent. Nachr. xxiii.  
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## ASILIDÆ, THEREVIDÆ.

- Nusa abdominalis*, *similis*, New Mexico, BROWN, p. 103, Kansas quart. vi, n. spp.  
*Psilocephala laticornis*, ♂, ♀, KERTÉSZ, p. 614, Termes. Fuzetek, xx.

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- Chrysopila griffithi*, N. Carolina, JOHNSON, p. 119, Ent. News Philad. 1897, n. sp.  
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*Leptogaster clavipes*, n. n. for the Jamaican *L. longipes*, JOHNSON, p. 120, Ent. News Philad. 1897.  
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*Symphoromyia hirta*, Pennsylvania, JOHNSON, p. 120, Ent. News Philad. 1897, n. sp.

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*Brachystoma vesiculosum*, sexual distinctions, MIK, p. 36, *cut*, Wien. ent. Zeit. xvi.

*Elaphropeza fulvithorax*, Ceylon, WULF, p. 138, *Termes. Fuzetek*, xx, n. sp.

[*Hemerodromia*: entries under this were misplaced last year in *Musc. acalypt.*, cf. Zool. Rec. xxxiii, 1896, p. 291.]

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*Aphrosylus prædator*, p. 146, pl. iv, figg. 1-6, *direptor*, p. 148, pl. iv, figg. 7-10, *grassator*, p. 149, pl. iv, figg. 12 & 13, California, WHEELER, t. c., n. spp.

## PIPUNCULIDÆ.

Monograph of European, BECKER, Berlin. ent. Zeitschr. 1897, pp. 25-100, pl. ii.

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## SYRPHIDÆ.

*Syrphidæ*. Notes on the genera and their characters, GIRSCHNER, pp. 569-571, 586-589, 603-607, Illustr. Wochenschr. ii.

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*B. tropicalis*, Texas, TOWNSEND, J. N. York Ent. Soc. v, n. sp.

*Brachypalpus inarmatus*, Idaho, HUNTER, p. 142, Canad. Ent. xxix, n. sp.

*Ceria willistoni*, Kansas, KAHL, p. 141, Kansas Quart. vi, n. sp.

*Chilosia verralliana*, Lower Austria, MIK, p. 116, Wien. ent. Zeit. xvi;

*C. alaskensis*, p. 124, *plutonia*, p. 125, *gracilis*, p. 126, pl. v, fig. 3,

*pacifica*, p. 127, *punctulata*, p. 128, N. America, HUNTER, Canad. Ent.

xxix: n. spp.

*Chrysotoxum arcuatum*, var. n. *angustifasciatum*, MIK, p. 115, Wien. ent. Zeit. xvi.

*Eristalis meigenii* (= *brousi*, Will.), HUNTER, p. 133, Canad. Ent. xxix.

*E. ornatus*, Mexico, TOWNSEND, p. 21, Ann. Nat. Hist. xix, n. sp.

*Eristalodes*, n. g. for part of *Eristalis*, MIK, p. 114, Wien. ent. Zeit. xvi.

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*Helophilus latus* (= *aureopilis*, Towns.), HUNTER, p. 139, Canad. Ent. xxix.

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- Meromacrus crucigerus*, description, TOWNSEND, p. 22, Ann. Nat. Hist. xix.
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- Milesia bella*, New Mexico, TOWNSEND, p. 142, Ann. Nat. Hist. xix, n. sp.
- Mixogaster breviventris*, Kansas, KAHL, p. 137, Kansas Quart. vi, n. sp.
- Nausigaster geminata*, Texas, p. 25, *unimaculata*, California, p. 24, TOWNSEND, Ann. Nat. Hist. xx; *N. meridionalis*, Mexico, TOWNSEND, p. 20 Ann. Nat. Hist. xix : n. spp.
- Ocyrtamius fuscipennis*, noticed; TOWNSEND, p. 21, Ann. Nat. Hist. xix.
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- Pipiza occidentalis*, New Mexico, TOWNSEND, p. 140, Ann. Nat. Hist. xix, n. sp.
- Pocota bomboides*, California, HUNTER, p. 141, Canad. Ent. xxix, n. sp.
- Pterallastes perfidiosus*, Brit. Columbia, HUNTER, p. 139, pl. v, fig. 5, t. c., n. sp.
- Pyritis*, n. g., p. 131, near *Sericomyia*, for *P. montigena*, n. sp., Idaho, p. 132, HUNTER, t. c.
- Sericomyia borealis*, early stages, BLOOMFIELD, p. 222, Ent. Mag. xxxiii.
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- Tropidia montana*, characters, HUNTER, p. 143, Canad. Ent. xxix.
- Volucella cordie*, p. 27, *rafaelana*, *nautilana*, p. 28, *opalina*, with var. *splendens*, p. 29, *viridana*, p. 30, Mexico, TOWNSEND, Ann. Nat. Hist. xx, n. spp.
- Xanthogramma*; characters, HUNTER, p. 130, Canad. Ent. xxix.

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- Larvæ found in parts of the body, SCHNEIDEMÜHL (1872).
- Cestridæ* of elephants, BRAUER, p. 13, Ent. Mag. xxxiii.
- Bogeria*, sp., larva, TOWNSEND, p. 9, Psyche, viii.
- Cuterebra* valid, not *Cutiterebra*, MIK, p. 35, Wien. ent. Zeit. xvi.
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- S. stylosa*, p. 24, *ethiopa*, p. 26, *minuta*, p. 27, Mexico, TOWNSEND, t. c., n. spp.
- Zodion albonotatum*, Texas, TOWNSEND, p. 175, J. N. York Ent. Soc. v, n. sp.



## PHORIDÆ.

*Puliciphora*, n. g., *Phorida*, approaching *Pulicidæ*, for *P. lucifera*, n. sp., Bismarck Archipelago, DAHL, p. 410, Zool. Anz. 1897.

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*Acemyia tibialis*, California, COQUILLETT, p. 116, Bull. Dep. Agric. ent. Tech. vii, n. sp.

*Admontia retinix*, California, COQUILLETT, p. 54, t. c., n. sp.

*Alophora nitida*, *diversa*, *grandis*, p. 45, *phasioides*, *fumosa*, *pulverea*, p. 46, N. America, COQUILLETT, t. c., n. spp.

*Apinops*, n. g., *Tachinidæ*, p. 67, for *A. atra*, n. sp., Illinois, p. 68, COQUILLETT, t. c.

*Aricia picti*, larval habits, BLANCHARD, pp. 652–654, pl. xvii, figg. 5–9, Ann. Soc. ent. France, 1896.

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*Atacta apicalis*, N. America, COQUILLETT, p. 83, Bull. Dep. Agric. ent. Tech. vii, n. sp.

*Baumhaueria vertiginosa*, note, MEUNIER, p. 20, Ann. Soc. Bruxelles, xix.

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*Brachychæta spinigera*, note, MEUNIER, p. 72, Ann. Soc. Bruxelles, xix.

*Brachycoma apicalis*, p. 131, *pulverea*, p. 132, N. America, COQUILLETT, Bull. Dep. Agric. ent. Tech. vii, n. spp.

*Caricea cingulipes*, characters, STEIN, p. 92, Wien. ent. Zeit. xvi.

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*Clausicella johnsoni*, *usitata*, N. America, COQUILLETT, p. 56, Bull. Dep. Agric. ent. Tech. vii, n. spp.

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### PUPIPARA.

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*Lipoptena depressa*, var. *n. mexicana*, its puparium, p. 290, TOWNSEND, p. 289, *Ann. Nat. Hist.* xx.  
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## APHANIPTERA (SIPHONAPTERA).

[Cf. C. ROTHSCHILD (945, 946), STOKES (1062), WAGNER (1138).]

Structure of pygidium of flea, STOKES (1062).

The genera discussed, *Typhlopsylla* (in sense of Taschenberg), cannot be maintained; figures of male copulatory structures; WAGNER, pp. 555 & 556, Horæ Soc. ent. Ross. xxxi.

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*Ceratophyllus consimilis*, p. 562, *dubius*, p. 563, *tesquorum* (on *Spermophilus musicus*), p. 564, *mustelæ* (on *Putorius vulgaris*), p. 565, *lagomys* (on *L. rutilus*), p. 567, *uralensis*, p. 571, *pinnatus* (on *Mus* sp.), p. 573, *silantiewi* (on *Arctomys bobac*), p. 575, Russia, WAGNER, *t. c.*, n. spp.

*Ceratopsylla variabilis* (on *Vesperugo nathusii*), Russia, p. 582, with var. *decimpilata*, p. 583, *jubata*, Crimea, *obscura* (on *Vesperugo discolor*), p. 584, *subobscura* (on *Vesperugo noctula*), p. 586, Russia, WAGNER, *t. c.*, n. spp.

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(E.) *RHYNCHOTA.*

## HEMIPTERA-HETEROPTERA.

[The titles indicated by the following names and numbers refer to *Hemiptera-Heteroptera*, viz.:—ASHMEAD (35), BERGROTH (68, 69), BREDDIN (126, 127), CHAMPION (416), HANDLIRSCH (454-457), HORVÁTH (504, 505, 506), HUEBER (518), JONCK (556), KARAWAIEW (563), KIRKALDY (588, 589, 590), KIRKLAND (591), LÉON (669), MARTIN (720, 721), MEUNIER (744), MONTANDON (760-770), MONTGOMERY (771), NOELLI (789, 790, 791), NOUALHIER (792), REUTER (921, 922), SHARP (1008), UHLER (1107).]

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## PENTATOMIDÆ.

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*Asolenidium*, n. g. for *Sphærocoris unicolor*, Dall., BREDDIN, p. 339, Ent. Nachr. xxiii.

*Brachyplatys raffrayi*, New Guinea, p. 444, *humeralis*, India, p. 446, MONTANDON, Ann. Soc. ent. France, 1896, n. spp.

*Cantharodes jaspidens* (= *tibialis*), MONTANDON, p. 436, Ann. Soc. ent. France, 1896.

*C. bouvieri*, Congo, MONTANDON, p. 438, *t. c.*, n. sp.

*Capnoda caucasica*, Daghestan, HORVÁTH, p. 83, Rev. Ent. franc. 1897, n. sp.

*Carpocoris varius*, var. *maculicollis* (= *Pentat. arabica*, Stål), HORVÁTH, p. 92, *t. c.*

*Coptosoma amyoti*, Pondicherry, p. 448, *bifarum*, p. 450, *bituminatum*, p. 452, China, *medians*, Grand Bassam, p. 454, *verrucosum*, Mou-Pin, p. 456, *rabieri*, p. 458, *davidi*, p. 460, *breviculum*, p. 461, China, *ordinatum*, Madagascar, p. 462, MONTANDON, Ann. Soc. ent. France, 1896, n. spp.

*Demoleus haglundii*, Paraguay, p. 2, *lethierryi*, Monte Video, p. 3, MONTANDON, Boll. Mus. Torino, No. 219, n. spp.

*Dendrocoris contaminatus*, Arizona, UHLER, p. 390, Tr. Maryland Ac. 1897, n. sp.

*Eurydema cognatum*, var. n. *apicale*, NOUALHIER, p. 77, Rev. Ent. franc. 1897. *E. festivum* (= *E. decoratum*, var. *putonia*, Antess.), HORVÁTH, p. 92, Rev. Ent. franc. 1897.

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*Hymenarcys crassa*, Arizona, UHLER, p. 387, *t. c.*, n. sp.

*Oplomus punctatus*, Argentina, MONTANDON, Boll. Mus. Torino, x, No. 219, p. 5, n. sp.

*Peribalus breviceps*, E. Siberia, HORVÁTH, p. 81, Rev. Ent. franc. 1897, n. sp.

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- P. crocatus*, Oregon, etc., p. 384, *mucronatus*, Cuba and Florida, p. 386, UHLER, Tr. Maryland Ac. 1897; *P. borellii*, Argentina, MONTANDON, Boll. Mus. Torino, x, No. 219, p. 5 : n. spp.
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- Thyreocoris borellii*, Paraguay, MONTANDON, Boll. Mus. Torino, No. 219, p. 1, n. sp.

## COREIDÆ.

*Coreidæ* of Belgium, JONCK (556).

- Agraphopus femoralis*, France and Turkestan, HORVÁTH, p. 84, Rev. Ent. franc. 1897, n. sp.
- Archimerus camposi*, Ecuador, MONTANDON, Bull. Soc. Bucarest, 1897, No. 3, p. 3, n. sp.
- Capaneus rubropictus*, Ecuador, MONTANDON, *op. cit.* p. 4, n. sp.
- Ceraleptus obtusus* (= *squalidus*, Costa), HORVÁTH, p. 92, Rev. Ent. franc. 1897.
- Spartocera ortonedui*, Ecuador, MONTANDON, Bull. Soc. Bucarest, 1897, No. 3, p. 6, n. sp.
- Stenocephalus putoni*, Syria, HORVÁTH, p. 84, Rev. Ent. franc. 1897, n. sp.
- Vilga spinosula*, Costa Rica, p. 3, *serrulata*, Brazil, p. 4, MONTANDON, Bull. Soc. Bucarest, vi, 1897, No. 2, n. spp.

## BERYTIDÆ.

- Cardopostethus lineatus*, Jak., referred to *Megalomerium*, HORVÁTH, p. 92, Rev. Ent. franc. 1897.

## LYGÆIDÆ, PYRRHOCORIDÆ.

Embryology of *Pyrrhocoris*, KARAWAIEW (563).

- Aphanus phæniceus*, var. n. *autrani*, HORVÁTH, p. 86, Rev. Ent. franc. 1897. *A. lethierryi* is a var. of *A. consors* not of *Graptopeltus validus*, HORVÁTH, p. 92, t. c.
- Bergidia*, n. g., *Pachymerini*, for *P. polychromus*, Spin., BREDDIN, p. 6, Magalha. Reise.
- Dacerla*, Sign., removed from *Pyrrhocoridae* to *Capsidæ*, BERGROTH, p. 95, Ent. News Philad. 1897.
- Drymus assimilis*, Tunis, HORVÁTH, p. 87, Rev. Ent. franc. 1897, n. sp.
- Emblethis brachynotus*, Hungary, HORVÁTH, p. 86, t. c., n. sp.
- Hyalochilus dolorus*, East Europe, HORVÁTH, p. 85, t. c., n. sp.
- Leptomelus dorsatus*, Jak. (= *Pezocoris reuteri*, Mont.), HORVÁTH, p. 92, t. c.
- Lygus cruciger*, Motsch. (= *marginatus*, Jak., *elegans*, Dist., *jakowleffi*, Leth. & Sev.), HORVÁTH, p. 92, t. c.
- Nysius irroratus*, var. n. *melancholicus*, BREDDIN, p. 4, Magalha. Reise.



*Oncopeltus bucanus*, var. n., BREDDIN, p. 341, Ent. Nachr. xxiii.

*Stenophthalmicus mixtus*, Tunis, MONTANDON, p. 98, Rev. Ent. franc. 1897, n. sp.

*Tropistethus majusculus*, distinguished from *sabuleti*, HORVÁTH, p. 92, Rev. Ent. franc. 1897.

### TINGITIDÆ.

*Acanthochila armigera*, figure, pl. ii, fig. 19, p. 28, CHAMPION, Biol. Centr.-Amer. Rhynch. ii.

*Amblystira fuscitarsis*, pl. ii, fig. 21, *opaca*, fig. 23, p. 30, *atrinervis*, fig. 24, *lævifrons*, fig. 25, p. 31, Centr. America, CHAMPION, t. c., n. spp.

*Catoplatus critinus*, Samarcand, HORVÁTH, p. 89, Rev. Ent. franc. 1897, n. sp.

*Corythaica monacha* (= *Typonotus planaris*, Uhler), *C. carinata*, figure, pl. i, fig. 11, CHAMPION, p. 9, Biol. Centr.-Amer. Rhynch. ii.

*C. unifasciata*, pl. i, fig. 8, p. 7, *setosa*, fig. 10, p. 8, Centr. America, CHAMPION, t. c., n. spp.

*Dicysta*, n. g., *Tingitini*, for *D. vitrea*, n. sp., Panama, pl. i, fig. 4, p. 5, CHAMPION, t. c.

*Galeatus*, synopsis of specific characters, HORVÁTH, p. 455, Termes. Fuzetek, xx.

*G. colpochilus*, Spain, *id.* p. 459, t. c.; *G. syrmienensis*, Hungary, HORVÁTH, p. 88, Rev. Ent. franc. 1897 : n. sp.

*Gargaphia panamensis*, pl. i, fig. 14, *iridescens*, pl. ii, fig. 1, Central America, CHAMPION, p. 10, Biol. Centr.-Amer. Rhynch. ii, n. spp.

*Kalama theryi*, Algeria, MONTANDON, p. 99, Rev. Ent. franc. 1897, n. sp.

*Lasiotropis amplicosta*, Algeria, MONTANDON, p. 100, Rev. Ent. franc. 1897, n. sp.

*Leptobyrsa latipennis*, pl. ii, fig. 13, p. 25, *translucida*, fig. 14, *plicata*, fig. 15, p. 26, *chiriquensis*, fig. 16, *nigriceps*, fig. 17, p. 27, Central America, CHAMPION, Biol. Centr.-Amer. Rhynch. ii, n. spp.

*Leptodictya cretata*, Guatemala, pl. ii, fig. 11, p. 23, *circumcincta*, Panama, fig. 12, p. 24, CHAMPION, t. c., n. spp.

*Leptopharsa unicarinata*, Panama, CHAMPION, p. 21, pl. ii, fig. 7, t. c., n. sp.

*Leptophya binotata*, pl. ii, fig. 27, *brevicornis*, fig. 28, Central America, CHAMPION, t. c., n. spp.

*Leptostyla vesiculosa*, pl. i, fig. 15, *longipennis*, fig. 16, p. 13, *tumida*, fig. 17, *setigera*, fig. 18, p. 14, *fimbriata*, fig. 19, *fuscofasciata*, fig. 20, p. 15, *elata*, fig. 21, p. 16, *lineata*, fig. 22, *gracilentia*, fig. 23, *angustata*, fig. 24, p. 17, *tenuis*, fig. 25, *dilaticolis*, pl. ii, fig. 2, p. 18, *bifasciata*, fig. 3, *divisa*, fig. 4, p. 19, *furculata*, fig. 5, *constricta*, fig. 6, p. 20, Central America, CHAMPION, t. c., n. spp.

*Macrotingis*, n. g., near *Leptostyla*, for *M. biseriata*, pl. ii, fig. 8, Panama, *uniseriata*, fig. 9, Guatemala, n. spp., CHAMPION, p. 22, t. c.

*Megalocysta*, n. g., p. 5, *Tingitini*, for *M. pellucida*, n. sp., Panama, pl. i, fig. 5, p. 6, CHAMPION, t. c.

*Monosteira minutula*, Algeria, MONTANDON, p. 101, Rev. Ent. franc. 1897, n. sp.

*Phatnoma marmorata*, pl. i, fig. 1, p. 3, *annulipes*, fig. 2, *ovata*, fig. 3, p. 4, Centr. America, CHAMPION, Biol. Centr.-Amer. Rhynch. ii, n. spp.

*Stenocysta*, n. g., p. 28, for *S. pilosa*, n. sp., Panama, pl. ii, fig. 18, p. 29, CHAMPION, t. c.

*Tigava pulchella*, Central America, CHAMPION, pl. ii, fig. 26, p. 32, t. c., n. sp.

PHYMATIDÆ.

*Phymatidæ*, monograph, HANDLIRSCH, pp. 127–230, pls. iv–ix, Ann. Hofmus. Wien, xii. We give only the new genera and species, for all else refer to the work itself.

- Agreuocoris*, n. g., p. 217, for *A. noualhieri*, n. sp., Mexico, p. 218, HANDLIRSCH, *t. c.*  
*Amblythyreus stalii*, p. 209, *intermedius*, p. 210, India, *gestroi*, Carin Chebà, p. 211, HANDLIRSCH, *t. c.*, n. sp.  
*Carcinochelis binghami*, Burma, SHARP, p. 35, Ent. Mag. xxxiii, n. sp.  
*Carcinocoris*, n. g., near *Carcinochelis*, for *C. crinaceus*, *castetsi*, Burma (n. spp. not described), HANDLIRSCH, p. 23, Verh. Ges. Wien, 1897.  
*Carcinocoris castetsi*, description and figure, HANDLIRSCH, p. 220, pl. vi, fig. 1, Ann. Hofmus. Wien, xii.  
*Cnizocoris*, n. g., p. 213, for *C. davidi*, Mou-Pin, pl. vi, fig. 8, *stenocephalus*, Darjiling, p. 214, n. spp., HANDLIRSCH, *t. c.*  
*Glossopelta*, n. g., p. 215, for *G. acuta*, pl. vi, fig. 4, Malay penins., etc., *montandoni*, Borneo, p. 216, *harmandi*, Cochin China, p. 217, pl. vi, fig. 5, n. spp., HANDLIRSCH, *t. c.*  
*Macrocephalus reuteri*, p. 190, *crassus*, p. 191, *vesiculosus*, pl. vii, fig. 3, *parvulus*, fig. 2, p. 192, S. America, *gracilis*, N. America, p. 193, *bergrothi*, Venezuela, fig. 4, p. 194, *stali*, Mexico, p. 195, *mopsus*, Brazil, p. 196, HANDLIRSCH, *t. c.*, n. spp.  
*Phymata vicina*, Florida, p. 150, *albopicta*, N. America and Mexico, p. 151, pl. iv, fig. 2, *reticulata*, p. 152, *laciniata*, Colombia, *noualhieri*, pl. iv, fig. 3, N. and Centr. America, p. 153, *distanti*, Jamaica, pl. iv, fig. 9, p. 157, *maculipennis*, Brazil, p. 158, *armata*, *karschii*, p. 174, *phyllo-morpha*, p. 176, *scabrosa*, p. 177, Brazil, HANDLIRSCH, Ann. Hofmus. Wien, xii, n. spp.

HYDROMETRIDÆ.

- Cylindrostethus* to be used in place of *Hydrobates*, KIRKALDY, p. 258, Entomologist, 1898.  
*Halobatopsis beginii*, Canada, ASHMEAD, p. 56, Canad. Ent. xxix, n. sp.  
*Rheumatobates*; affinities, etc., HEIDEMANN, p. 50, P. ent. Soc. Washington, iv.  
*Velia currens*, var. n. *maderensis*, NOUALHIER, p. 77, Rev. Ent. franc. 1897.

REDUVIIDÆ and PHIMOPHORIDÆ.

- Chondrolophus comptus*, Madagascar, BERGROTH, p. 201, Bull. Soc. ent. France, 1897, n. sp.  
*Harpactor americanus*, California, BERGROTH, p. 96, Ent. News Philad. 1897.  
*Nabis camerani*, Piedmont, NOELLI, Boll. Mus. Torino, 1897, No. 272; also Ann. Acc. Agric. Torino, xl, p. 16 (sep. copy), n. sp.  
*Pantolestes rex*, Cameroons, BREDDIN, p. 341, Ent. Nachr. xxiii, n. sp.  
*Phimophoridae*, n. fam., between *Aradidae* and *Phymatidae*, for *Phimophorus spissicornis*, Bergr., HANDLIRSCH, pp. 408–410, Verh. Ges. Wien, 1897; p. 558, *t. c.*, considered doubtfully distinct from *Reduviidae*.  
*Phorticus parvulus*, Algeria, MONTANDON, p. 104, Rev. Ent. franc. 1897, n. sp.  
*Pirates hybridus*, racial variation, synonymy, HORVÁTH, p. 93, *t. c.*  
*Putoniella*, n. g., p. 102, near *Holoptilus*, for *P. vaulogeri*, n. sp., Tunisia, p. 103, MONTANDON, Rev. Ent. franc. 1897.

## ANTHOCORIDÆ, SALDIDÆ, CIMICIDÆ.

- Acanthia trybomi* in Novaia Zemlaia, BIANCHI, p. 362, Annuaire Mus. St. Petersb. 1897.  
*Erianotus madagascariensis*, Madagascar, MARTIN, p. 274, Bull. Soc. ent. France, 1897, n. sp.  
*Leptopus marmoratus* (= *bertkawi*, Verh.), HORVÁTH, p. 93, Rev. Ent. franc. 1897.  
*Piezostethus obliquus*, Costa sub *Xylocoris* (= *signatus*, Jak.), HORVÁTH, p. 93, Rev. Ent. franc. 1897.

## CAPSIDÆ.

- The characters of the palæarctic genera of the division *Capsaria*, REUTER, Ofv. Finska Forh. xxxviii, pp. 156–171.  
*Capsidæ* of Germany, Div. *Miraria*, HUEBER (518).  
*Actinonotus*, n. g., type *Capsus pulcher*, H. Sch., REUTER, p. 164, Ofv. Finska Forh. xxxviii.  
*A. ruber*, Thuringia, REUTER, p. 197, Wien. ent. Zeit. xvi, n. sp.  
*Adelphocoris*, n. g., type *Cimex seticornis*, Fab., REUTER, p. 168, Ofv. Finska Forh. xxxviii.  
*Calocoris fokkeri*, Amasia, REUTER, p. 198, Wien. ent. Zeit. xvi, n. sp.  
*Camptozygum*, n. g., type *Phytocoris pinastri*, REUTER, p. 160, Ofv. Finska Forh. xxxviii.  
*Capsus cinctus*, varr., REUTER, p. 200, Wien. ent. Zeit. xvi.  
*Dacerla* (= *Myrmecopsis*, Uhl.) and is a Capsid, BERGROTH, p. 95, Ent. News Philad. 1897.  
*Halticus bractatus*, ♂ ♀, figg., pl. x, habits, pp. 209 & 210, WEBSTER, Ent. News Philad. 1897.  
*Irbisia*, Reut. and *Thyrillus*, Uhl., synonymous, REUTER, p. 157, Ofv. Finska Forh. xxxviii.  
*Megalocera errativa*, ♀, dimorphic, SAUNDERS, p. 15, Ent. Mag. xxxiii.  
*Phytocoris miridioides*, ♀, brachypt., REUTER, p. 200, Wien. ent. Zeit. xvi.  
*Pæclonotus*, n. g., type *picturatus*, Reut. (= *Calocoris hedenborgi*, Reut. nec Fieb.), REUTER, p. 167, Ofv. Finska Forh. xxxviii.  
*Trichophoroncus*, n. g., type *Calocoris albonotatus*, Jak., REUTER, p. 168, t. c.

## HYDROCORISÆ.

- Notes on the fossil Hydrocorisæ of the Teyler Museum, MEUNIER (744).  
 Structure of the lower lip in several forms, LÉON, Zool. Anz. 1897, pp. 73–76.  
*Ambrysus acutangulus*, Corrientes, p. 126, *fraternus*, Goyaz, p. 128, *geayi*, Darien, p. 129, MONTANDON, Bull. Mus. Paris, 1897; *A. crenulatus*, New Grenada, p. 13, *oblongulus*, Costa Rica, p. 14, *attenuatus*, Brazil, p. 15, *pulchellus*, Guatemala, p. 16, *parviceps*, Mexico, p. 17, *californicus*, S. California, p. 18, *bergi*, Buenos Ayres, p. 19, *mexicanus*, p. 21, *hybridus*, p. 22, Mexico, MONTANDON, Verh. Ges. Wien, 1897: n. spp.  
*Aneurocoris*, n. g., p. 436, *Laccocorina*, for *A. insolitus*, n. sp., Tanganyika, p. 437, MONTANDON, Verh. Ges. Wien, 1897.  
*Aptinocoris*, n. g., p. 64, for *A. papuus*, n. sp., New Guinea, p. 65, MONTANDON, Ann. Soc. ent. Belgique, xli.  
*Belostoma americanum*, etc., eggs, habits, WEED (1178), pp. 3–10.  
*Cheirochela*: characters, MONTANDON, p. 367, Ann. Mus. Genova, xxxvii.  
*C. birmaniensis*, p. 369, *feana*, p. 370, Burma, *id. t. c.*, n. sp.  
*Corixa* and *Corisa*: synonymical notes, KIRKALDY, pp. 259 & 260, Entomologist, 1897. *C. ovivora*, Westw., referred to *Sigara* and described,

- KIRKALDY, p. 238, Entomologist, 1897. *C. australis*, description, C. spp., bibliographic notes, pp. 55 & 56, *C. caledonica*, n. n. for *cognata*, D. & S., p. 56, KIRKALDY, Ann. Nat. Hist. xx. *C. quadrata*, dimorphism, BREDDIN, p. 13, Magalha. Reise.
- C. denseconscripta*, Buenos Ayres, *id. t. c.* p. 16; *C. eurynome*, S. Australia, KIRKALDY, p. 54, Ann. Nat. Hist. xx; *C. serrulata*, p. 391, Mexico to California, *acuminata*, Texas, p. 392, *kennicottii*, N. America, p. 393, UHLER, Tr. Maryland Ac. 1897 : n. spp.
- Cryphocriscus macrocephalus*, Vera Paz, MONTANDON, p. 125, Bull. Mus. Paris, 1897, n. sp.
- Ctenipocoris*, n. g., p. 373, *Laccocorinæ*, for *C. asiaticus*, n. sp., Burma, p. 374, MONTANDON, Ann. Mus. Genova, xxxvii.
- Deinostoma*, n. n. for *Serphus*, Stål, KIRKALDY, p. 258, Entomologist, 1897.
- Diaphorocoris*, n. g. for *D. notatus*, n. sp., Ceylon, MONTANDON, p. 61, Ann. Soc. ent. Belgique, xli.
- D. punctatissimus*, Kirb. (= *notatus*, Mont. infra), MONTANDON, p. 445, Verh. Ges. Wien, 1897.
- Diaprepocoris*, n. g., p. 52, for *D. barycephala*, n. sp., Australia and Tasmania, p. 53, KIRKALDY, Ann. Nat. Hist. xx.
- Gelastocoris*, n. n. for *Galgulus*; the family also becoming *Gelastocoridae*, KIRKALDY, p. 258, Entomologist, 1897.
- Gestrorella*, n. g., *Cheirochelinae*, for *G. limnocoroides*, n. sp., Burma, MONTANDON, p. 371, Ann. Mus. Genova, xxxvii.
- Heleocoris tabidulus*, characters, MONTANDON, p. 59, Ann. Soc. ent. Belgique, xli.
- H. breviceps*, India, p. 55, *obscuratus*, Sumatra, p. 56, *naucoroides*, Madagascar, p. 57, *elongatus*, India, p. 59, MONTANDON, *t. c.*; *H. strabus*, Tenasserim, MONTANDON, p. 372, Ann. Mus. Genova, xxxvii; *H. spinipes*, New Friburg, p. 447, *læviceps*, Tenasserim, p. 448, *indicus*, Bellary, p. 450, *ovatus*, Lakhon, p. 451, *bergrothi*, E. India, p. 452, MONTANDON, Verh. Ges. Wien, 1897 : n. spp.
- Idiocarus*, n. g., near *Cryptocricus*, for *I. elongatus*, n. sp., New Guinea, MONTANDON, p. 8, *t. c.*
- Laccocoris staudingeri*, p. 440, *horvathi*, p. 442, Borneo, *discus*, Cameroons, p. 443, MONTANDON, *t. c.*; *L. aurivillii*, Namaquamin, p. 50, *nervicus*, Sumatra, p. 52, *marginatus*, Borneo, p. 54, MONTANDON, Ann. Soc. ent. Belgique, xli : n. spp.
- Limnocoris borellii*, p. 3, *stali*, p. 4, *ovatus*, *pauper*, S. America, *signoreti*, Mexico, p. 5, *pectoralis*, S. America, *virescens*, S. and Centr. America, p. 7, *pusillus*, New Friburg, p. 8, MONTANDON, Boll. Mus. Torino, 1897, No. 297, n. spp.
- Macrocoris convexus*, Niger, MONTANDON, p. 63, Ann. Soc. ent. Belgique, xli, n. sp.
- Micronecta*, n. n. for *Sigara*, Fab., KIRKALDY, p. 260, Entomologist, 1897.
- Mononyx serratus*, Burma, MONTANDON, p. 365, Ann. Mus. Genova, xxxvii, n. sp.
- Notonecta*: revision, with distribution, synonymy and new varietal nomenclature, KIRKALDY, pp. 391-426, Tr. ent. Soc. London, 1897. *N. glauca*, varietal synonymy, HORVÁTH, p. 94, Rev. Ent. franc. 1897. *N. glauca*, varietal synonymy, KIRKALDY, pp. 222-224, *t. c.*, *N. glauca*, v. *fulva*, FUENTE, p. 130, Act. Soc. Espan. 1897.
- N. montezuma*, Mexico, p. 402, *handlirshi*, Australia, p. 408, KIRKALDY, Tr. ent. Soc. London, 1897; *N. montandoni*, China, p. 56, *lactitans*, Guinea, *uhleri*, N. America, p. 58, KIRKALDY, Ann. Nat. Hist. xx : n. spp.
- Pelocoris politus*, p. 8, *minutus*, p. 9, Paraguay, MONTANDON, Boll. Mus. Torino, x, No. 219, n. spp.
- Peloriidida*, n. fam., near *Pelagonida*?, p. 10, for *Peloriidium hammoniorum*, n. g. et spec., p. 12, pl., fig. 4, Navarin Is., BREDDIN, Magalha. Reise.

*Peloriidum*, n. g., cf. supra.

*Pseudambrysus*, n. g., p. 9, for *P. fairmairei*, n. sp., Madagascar, p. 10, MONTANDON, Verh. Ges. Wien, 1897.

*Siguru siva*, n. n. for *striata*, Fieb., *S. m-notata*, n. n. for *lineata*, Fieb., KIRKALDY, p. 240, Entomologist, 1897.

*Temnocoris*, n. g., p. 437, *Laccocorinae*, for *T. translucidus*, n. sp., Madagascar, p. 438, MONTANDON, Verh. Ges. Wien, 1897.

## HEMIPTERA-HOMOPTERA.

[Cf. BAKER (42-45), BALL (47), DISTANT (244-247, 253), FABRE (303), FOWLER (416), HORVÁTH (506), MELICHAR (737), NOUALHIER (792), OSBORN & BALL (806), OSBORN (807), POTTER (876), SCHWARZ (988), THEN (1071), WEBSTER (1177): also *Aphididae* and *Coccidae*.]

## CICADIDÆ.

Habits of Mediterranean *Cicadidae*, hatching of eggs, primary larva, FABRE, Souvenirs, v, chapp. xiii-xvii.

*Acrilla globosa*, New Guinea, DISTANT, p. 383, Ann. Mus. Genova, xxxvii, n. sp.

*Auta*, n. g., near *Rustia*, for *A. insignis*, n. sp., New Guinea, DISTANT, p. 381, t. c.

*Bæturia rubricata*, *loriæ*, p. 382, *viridicata*, p. 383, New Guinea, DISTANT, t. c., n. spp.

*Calcagninus marginatus*, Burma, DISTANT, p. 19, Ann. Nat. Hist. xx, n. sp.

*Cicada septendecim*, broods v, xiii, in Iowa, OSBORN, P. Iowa Ac. iii, pp. 195-201, map; *C. septendecim*, distribution of brood xv, in Ohio in 1897, with notes on broods xxii & viii, WEBSTER, pp. 225-229, pl. viii, Canad. Ent. xxix. *C. mærens*, etc., habits, KERSHAW, p. 119, Victorian Natural. xiii.

*C. operculissima*, Lombok, DISTANT, p. 369, Ann. Nat. Hist. xx, n. sp.

*Cosmopsaltria velitaris*, Burma, DISTANT, p. 18, Ann. Nat. Hist. xx; *C. loriæ*, p. 378, *mimica*, p. 379, *atra*, p. 380, New Guinea, DISTANT, Ann. Mus. Genova, xxxvii : n. spp.

*Huechys incarnata*, var. b, DISTANT, p. 370, Ann. Nat. Hist. xx.

*Lembeja papuensis*, New Guinea, DISTANT, p. 382, Ann. Mus. Genova, xxxvii; *L. fruhstorferi*, Celebes, DISTANT, p. 371, Ann. Nat. Hist. xx : n. spp.

*Monomatapa*, n. g., *Tibiceninae*, for *M. insignis*, n. sp., Mashunaland, DISTANT, p. 129, Ann. Nat. Hist. xix.

*Muda*, n. g., near *Rustia*, for *M. concolor*, n. sp., Mentawai island, DISTANT, p. 384, Ann. Mus. Genova, xxxvii.

*Platypleura centralis*, *absumilis*, S. Africa, DISTANT, op. cit. xix, n. spp.

*Pæciopsaltria furva*, Transvaal, p. 126, *marshalli*, Zambesi, p. 127, DISTANT, Ann. Nat. Hist. xix; *P. handlirschi*, Madagascar, DISTANT, p. 282, t. c.; *P. watsoni*, Burma, DISTANT, p. 18, op. cit. xx : n. spp.

*Pomponia cuneata*, Burma, DISTANT, p. 19, op. cit. xx; *P. gigantea*, Port Moresby, DISTANT, p. 380, Ann. Mus. Genova, xxxvii : n. spp.

## FULGORIDÆ.

*Cixius granulatus*, Hungary, HORVÁTH, p. 620, Termes. Fuzetek, xx; *C. verticalis*, Madeira, NOUALHIER, p. 79, pl. i, fig. 1, Rev. Ent. franc. 1897 : n. spp.

*Delphax lepidus*, Boh., referred to *Conomelus*, HORVÁTH, p. 94, t. c.

- D. minuscula*, p. 622, *palliceps*, p. 623, *mocsaryi*, p. 624, Hungary, HORVÁTH, Termes. Fuzetek, xx, n. spp.
- Dictyophora europæa*, var. n. *rosea*, MELICHAR, p. 72, Wien. ent. Zeit. xvi.
- Eurysa clypeata*, Hungary, HORVÁTH, p. 621, Termes. Fuzetek, xx, n. sp.
- Hysteropterum difforme* (= *camelus*, Costa), HORVÁTH, p. 94, Rev. Ent. franc. 1897.
- H. fauveli*, Madeira, NOUALHIER, p. 79, pl. i, fig. 3, t. c., n. sp.
- Kelisia henschii*, Hungary, HORVÁTH, p. 620, Termes. Fuzetek, xx, n. sp.
- Liburnia albifrons*, ♀, MELICHAR, p. 188, Wien. ent. Zeit. xvi.
- L. stigmatica*, Dalmatia, MELICHAR, p. 69, t. c., n. sp.
- Mycterodus longiceps* is a valid species, MELICHAR, p. 148, t. c.
- Paropioxys bellus*, Nyassaland, DISTANT, p. 130, Ann. Nat. Hist. xix, n. sp.
- Peltonotellus melichari*, Eur. cent., HORVÁTH, p. 89, Rev. Ent. franc. 1897, n. sp.
- Plagiopsis scotti*, p. 17, *bergi*, p. 18, S. Patagonia, BREDDIN, Magalha. Reise, n. spp.
- Stiroma montana*, Hungary, HORVÁTH, p. 625, Termes. Fuzetek, xx, n. sp.
- Tettigometra læta* and *lepida*, distinguished, HORVÁTH, p. 94, Rev. Ent. franc. 1897.
- T. sororcula*, Hungary, HORVÁTH, p. 91, t. c., n. sp.
- Trypetimorpha fenestrata* and *psyllipennis* are forms of one, HORVÁTH, p. 94, t. c.

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- FOWLER commences the enumeration and illustration of the Central American *Cercopidæ*, Biol. Centr.-Amer. Rhynchot. Homopt. ii, pp. 174 et seqq.
- Aphrophora lævior*, pl. xii, fig. 7, *perdubia*, *grisea*, fig. 8, Central America, FOWLER, p. 194, Biol. Centr.-Amer. Rhynchot. Homopt. ii, n. spp.
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- Lepyronia coleoptrata*, var. n. *obscura*, MELICHAR, p. 72, Wien. ent. Zeit. xvi.
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*A. pallifrons*, *margaritacea*, Hungary, HORVÁTH, p. 630, Termes. Fuzetek, xx, n. spp.

*Agallia insularis*, varr., fig., BREDDIN, p. 20, Magalha. Reise.

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- Dicraneura sinuata*, p. 112, *incisa*, p. 115, Austria, THEN, Mt. Ver. Steiermark, xxxiii, n. spp.
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- Idiocerus stali* (= *bicolor*, Mel.), MELICHAR, p. 14, t. c.
- I. humilis*, Hungary, HORVÁTH, p. 625, Termes. Fuzetek, xx, n. sp.
- Koebelia*, n. g., subfam. n., *Koebeliinae*, for *K. californica*, n. sp., Placer County, BAKER, p. 76, Psyche, viii.
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- Platymetopius acicularis* (= *albolimbatus*, Kb.), HORVÁTH, p. 95, Rev. Ent. franc. 1897.
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- S. mexicana*, Vera Cruz, BAKER, p. 157, t. c., n. sp.
- Termitopsyllus*, n. g., *purpureus*, n. sp., Madagascar, in nests of *Eutermes canaliculatus*, WASMANN, p. 169, Abh. Senckenb. Ges. xxi.
- Thamnotellix signifer*, Austria, THEN, p. 105, Mt. Ver. Steiermark, xxxiii; *T. lauri*, p. 631, *placidus*, p. 632, Hungary, HORVÁTH, Termes. Fuzetek, xx; *T. lusoria*, p. 226, *perspicillata*, p. 227, Iowa, OSBORN & BALL, P. Iowa Ac. iv : n. spp.
- Typhlocyba ficaria*, Hungary, HORVÁTH, p. 636, Termes. Fuzetek, xx, n. sp.
- Zygina versuta*, Dalmatia, MELICHAR, p. 71, Wien. ent. Zeit. xvi; *Z. orchroleuca*, p. 637, *dorsalis*, Hungary, *discolor*, Croatia, p. 638, HORVÁTH, Termes. Fuzetek, xx : n. spp.
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*Chermes*; monograph continued, *C. abietis*, *viridunus*, *viridis*, characters and habits, pp. 1–18, figg., pls. i–v, *strobilobius*, *lapponicus*, pp. 19–32, pls. ii, vi etc., *orientalis*, note, p. 33, synonymy of genus and species, determination according to food-habits, pp. 46 & 47, CHOLODKOVSKY, Horæ Soc. ent. Ross. xxxi.

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*Ceronema japonicum*, Japan, MASKELL, p. 243, Ent. Mag. xxxiii, n. sp.  
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*C. striata*, Algeria, NEWSTEAD, p. 96, pl. iv, fig. 8, Tr. ent. Soc. London, 1897; *C. cockerelli*, China and San Francisco, p. 278, *aucubæ*, p. 279, *wistariæ*, p. 280, Japan and San Francisco, COOLEY, Canad. Ent. xxix : n. spp.  
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*Diaspis roseæ*, var. n. *spinosa*, MASKELL, p. 241, Ent. Mag. xxxiii. *D. calyptroides*, varr. (= *cacti*, *opuntia*, *opunticola*), MASKELL, p. 299, Tr. N. Zealand Inst. xxix.  
*D. fallax* (= *ostreeformis*, Sign. nec Curt.), HORVÁTH, p. 95, Rev. Ent. franc. 1897; *D. perimilis*, Mexico, COCKERELL, p. 267, Canad. Ent. xxix : n. spp.  
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*Osmylus africanus*, Zanzibar, KOLBE, t. c., p. 33, pl. fig. 9, n. sp.

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*Phalascusa*, n. g. for *P. hildebrandti*, n. sp., E. Africa, KOLBE, t. c., p. 31, pl. fig. 3.

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*Trichodectes quadraticeps*, fig. 1, p. 185, from a fox, *californicus*, fig. 2, p. 186, from a pocket mouse, California, CHAPMAN, Ent. News Philad. 1897, n. spp.

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*Ladona*, n. g. for *Libellula exusta*, Say, p. 146, habits, nymph described, p. 144, NEEDHAM, *t. c.*  
*Lanthus*, n. g., type *Gomphus parvulus*, Selys, NEEDHAM, p. 166, *t. c.*  
*Libellago hartmanni*, Transvaal, FÖRSTER, p. 216, *Ent. Nachr.* xxiii, n. subsp.  
*Matronoides*, n. g. for *M. cyaneipennis*, n. sp., Borneo, FÖRSTER, p. 101, *Wien. ent. Zeit.* xvi.  
*Matronoides*, characters and affinities, FÖRSTER, p. 204, *Ann. Soc. ent. Belgique*, xli.  
*Miathyria flavescens*, Amazons, KIRBY, p. 600, pl. xiii, fig. 2, *Ann. Nat. Hist.* xix, n. sp.  
*Micrathyria cambridgei*, p. 608, pl. xiii, fig. 4, *eximia*, fig. 3, p. 609, *tibialis*, figg. 5 & 6, *basalis*, pl. xii, fig. 1, p. 610, *venusta*, pl. xiii, fig. 1, p. 612, Amazons, KIRBY, *t. c.*, n. spp.  
*Misagria funerea*, Nicaragua, CARPENTER, p. 434, pl. xvi, figg. 5-8, *P. Dublin Soc.* viii, n. sp.  
*Neurobasis* and its subgenera, p. 206, *N. cyaneipennis*, ♀, p. 207, *N. basilaris*, var. *japonica*, p. 208, list of species, p. 210, FÖRSTER, *Ann. Soc. ent. Belgique*, xli. *N. chinensis* and its races, with *australis*, new race, p. 428, SELYS, pp. 427-430, *Ann. Soc. ent. Belgique*, xli.  
*Ophiogomphus johannus*, p. 182, *carolus*, p. 183, New York, NEEDHAM, *Canad. Ent.* xxix, n. spp.  
*Orcus*, n. g. (see *Arigomphus*, supra), type *pallidus*, Ramb., NEEDHAM, p. 167, *Canad. Ent.* xxix.  
*Orthetrum kraepelini*, Centr. Asia, RIS, p. 45, *Ann. Soc. ent. Belgique*, xli, n. sp.  
*Perithemia austeni*, Amazons, KIRBY, p. 602, pl. xii, figg. 4 & 5, *Ann. Nat. Hist.* xix, n. sp.  
*Protorthemis wahnesi*, New Guinea, FÖRSTER, p. 39, *Ann. Soc. ent. Belgique*, xli, n. sp.  
*Rhinocypha stygia*, Kina Balu, FÖRSTER, p. 210, *Ann. Soc. ent. Belgique*, xli; *R. pagenstecheri*, p. 333, Lombok, with race *sumbana*, Sumba, p. 334, FÖRSTER, *Ent. Nachr.* xxiii : n. spp.  
*Selynthemis*, n. g., p. 47, for *Urothemis nigra*, Selys, sp. fully described, pp. 48 & 49, RIS, *Ann. Soc. ent. Belgique*, xli.  
*Stylurus*, n. g., type *plagiatus*, Selys, NEEDHAM, p. 167, *Canad. Ent.* xxix.  
*S. segregans*, Illinois, NEEDHAM, p. 185, *t. c.*, n. sp.  
*Thaumatoneura*, n. g., near *Amphipteryx*, p. 130, for *T. inopinata*, n. sp., China or Japan?, p. 131, McLACHLAN, *Ent. Mag.* xxxiii.  
*Uracis siemensii*, Amazons, KIRBY, p. 605, pl. xii, fig. 3, *Ann. Nat. Hist.* xix, n. sp.  
*Urothemis*: revision of the four subgenera, SELYS, pp. 68-86, *Ann. Soc. ent. Belgique*, xli.  
*Zyxomma multinervis*, New Guinea, CARPENTER, p. 435, pl. xvi, figg. 1-4, *P. Dublin Soc.* viii, n. sp.

## THYSANOPTERA.

[*Cf.* BEACH (58), JABLONOWSKI (527), OSBORN (805).]

- Phlaothrips statices* and others, attacks on corn, characters, JABLONOWSKI (527).  
*P. verbasci*, Iowa, OSBORN, p. 228, *P. Iowa Ac.* iii, n. sp.  
*Sericothrips perplexa*, Iowa, BEACH, p. 216, *P. Iowa Ac.* iii, n. sp.  
*Thrips maidis*, p. 219, *variabilis*, p. 220, *inequalis*, p. 223, *lactuce*, p. 224, *pallida*, p. 226, Iowa, BEACH, *t. c.*, n. spp.

(G.) *APTERA*.

[The titles indicated by the following numbers relate to *Aptera*, viz. :—  
BANKS (51), BOUVIER (120), CALL (153), CARPENTER (158), CLAYPOLE (185), GIARD (407), HEYMONS (478, 480), MADDOX (705), MATTHEW (726), POPPE & SCHÄFFER (874), SCHÄFFER (959, 960), SCHÖTT (977), UZEL (1110, 1111), VIRÉ (1133), WILLEM (1189), WILLEM & SABBÉ (1191).]

*Gastrotheoidea*, n. suborder for *Gastrotheus*, CASEY, COOK, p. 53, P. ent. Soc. Washington, iv.

Table of the genera of *Apterygota*, SCHÄFFER, pp. 32–40, Magalha. Reise.  
Development and morphology of *Thysanura* (*Lepisma saccharina*); relation to other Orders, HEYMONS, Zeitschr. wiss. Zool. lxii, pp. 583–631.

Structure of the alimentary canal in various forms of *Thysanura* and *Collembola*, HEYMONS (480).

Resemblance between European and Patagonian *Aptera*, GIARD (407).

New supposed *Thysanuran* from Silurian of New Brunswick, MATTHEW (726).

Structure of scales of *Seira buskii* and *Lepidocyrtus*, MADDOX (705).

## THYSANURA.

Embryology of *Campodea* and *Lepisma*, UZEL (1110). Embryology of *Campodea*: morphology of trophi and abdominal appendages, UZEL, Zool. Anz. 1897, pp. 232–237.

*Campodea staphylinus*, the cavernicolous forms, VIRÉ, pp. 89–95, Bull. Mus. Paris, 1897.

*Japyx bidentatus*, Valparaiso, SCHÄFFER, p. 30, Magalha. Reise, n. sp.

*Lepisma rubro-violacea*, p. 190, *reticulata*, p. 192, California, SCHÖTT, P. Calif. Ac. vi, n. spp.

*Lepismina polypoda*, mode of feeding, JANET (545).

*L. bifida*, Valparaiso, SCHÄFFER, p. 27, Magalha. Reise, n. sp.

*Machilis aurantiacus*, California, SCHÖTT, p. 188, P. Calif. Ac. vi, n. sp.

*Maindronia*, n. g. for *M. mascatensis*, n. sp., Mascat, BOUVIER, p. 23, Bull. Soc. ent. France, 1897.

*Trinemophora*, n. g. for *T. michaelsoni*, n. sp., Valparaiso, SCHÄFFER, p. 29, Magalha. Reise.

## COLLEMBOLA.

Monograph of the *Collembola* of Hamburg, with numerous critical and synonymical notes, SCHÄFFER (960).

*Collembola* of Bremen with notes on habits, POPPE & SCHÄFFER (874).

Structure of eyes: histology and function of post-antennal organ, WILLEM (1189).

Cephalic and salivary glands; function of ventral tube, WILLEM & SABBÉ, p. 130, Ann. Soc. ent. Belgique, xli.

Peculiar cleavage in development in egg of *Anurida*: phylogenetic importance, CLAYPOLE (185).

- Achorutes spinifer*, Berlin, SCHAFFER, p. 174, pl., fig. 51, Mt. Mus. Hamburg, xiii, n. sp.
- Anurida clavata*, Tierra del Fuego, SCHAFFER, p. 7, Magalha. Reise, n. sp.
- Anurophorus*; validity, SCHOTT, p. 186, P. Calif. Ac. vi.
- Aphorura neglecta*, Hamburg, SCHAFFER, p. 162, figg. 15 & 16, Mt. Mus. Hamburg, xiii; *A. trisetosa*, p. 5, *sexpunctata*, p. 6, Chili, SCHAFFER, Magalha. Reise, n. spp.
- Cremastocephalus*, n. g., near *Campylothorax*, for *C. trilobatus*, n. sp., Mexico, SCHOTT, p. 175, P. Calif. Ac. vi.
- Cyphoderus martelli*, Ireland, CARPENTER, p. 228, pl. ii, figg. 6-10 (p. 257 said to be *Seira cavernarum*), n. sp.
- Entomobrya orcheselloides*, Germany, SCHAFFER, p. 196, Mt. Mus. Hamburg, xiii; *E. cavicola*, Kentucky, BANKS, p. 380, pl. x, fig. 2, Amer. Natural. 1897; *E. ceca*, *binoculata*, p. 178, *sexoculata*, p. 180, *atrocincta*, p. 181, *triangularis*, p. 182, California, SCHOTT, P. Calif. Ac. vi; *E. pulchra*, Tierra del Fuego, p. 21, *virescens*, Valparaiso, p. 23, SCHAFFER, Magalha. Reise : n. spp.
- Isotoma lacustris*, n. n. for *litoralis*, Schott, SCHOTT, p. 185, P. Calif. Ac. v, 1.
- Isotoma minor*, p. 182, fig. 65, *tridenticulata*, p. 183, figg. 75 & 76, *nivea*, p. 184, figg. 77 & 78, *notabilis*, p. 187, fig. 81, *griseescens*, p. 188, fig. 87, *longidens*, p. 188, figg. 88, 90, *denticulata*, figg. 95 & 96, *monstrosa*, figg. 97-99, p. 189, Germany, SCHAFFER, Mt. Mus. Hamburg, xiii; *I. georgiana*, S. Georgia and Tierra del Fuego, p. 16, *silvatica*, Rio Grande, *fulva*, p. 18, *obtusicauda*, Valparaiso, *conjungens*, Tierra del Fuego, p. 19, SCHAFFER, Magalha. Reise : n. spp.
- Lepidocyrtus parckardi* (sic), *fulvus*, Lower California, SCHOTT, p. 173, P. Calif. Ac. vi, n. spp.
- Lepidophorella*, n. g., near *Tomocerus*, for *L. flava*, n. sp., Valparaiso, SCHAFFER, Magalha. Reise, p. 25.
- Lipura wrightii*, characters, CARPENTER, p. 230, Irish Natural. vi.
- Odoniella*, n. g., *Poduridae*, for *O. loricata*, n. sp., Valdivia, SCHAFFER, p. 9, Magalha. Reise.
- Polyacanthella*, n. g., near *Friesea*, for *P. brevicaudata*, n. sp., Rio Grande, SCHAFFER, p. 15, Magalha. Reise.
- Schottella*, n. g., near *Achorutes*, p. 175, *S. parvula*, figg. 61, 35, *corticicola*, figg. 62, 34, *poppei*, figg. 63, 64, 36, n. spp., Germany, p. 176, SCHAFFER, Mt. Mus. Hamburg, xiii.
- S. subcrassa*, Rio Grande, SCHAFFER, p. 13, Magalha. Reise, n. sp.
- Sinella cavernicola*, referred to *Templetonia*, CARPENTER, p. 229, Irish Natural. vi.
- S. hofii*, Hamburg, SCHAFFER, p. 192, Mt. Mus. Hamburg, xiii, n. sp.
- Sira variabilis*, Tierra del Fuego, SCHAFFER, p. 23, Magalha. Reise, n. sp.
- Smynthurus*, aquatic sp., copula, FOLSOM, p. 12, Psyche, viii.
- S. penicillifer*, p. 211, *atratus*, p. 212, Germany, SCHAFFER, Mt. Mus. Hamburg, xiii; *S. clavatus*, p. 33, *macgillivrayii*, p. 34, New York, BANKS, J. N. York Ent. Soc. v; *S. mammothia*, Kentucky, BANKS, p. 381, pl. x, fig. 1, Amer. Natural. 1897; *S. longicornis*, California, SCHOTT, p. 170, P. Calif. Ac. vi; *S. serratus*, Navarin, p. 26, *uschuaisensis*, Rio Grande, p. 27, SCHAFFER, Magalha. Reise : n. spp.
- Templetonia quadrioculata*, California, SCHOTT, p. 183, P. Calif. Ac. vi, n. sp.
- Tomocerus americanus*, San Francisco, SCHOTT, p. 172, P. Calif. Ac. vi, n. sp.
- Triacanthella*, n. g., near *Friesea*, for *T. michaelsoni*, n. sp., Patagonia, SCHAFFER, p. 14, Magalha. Reise.
- Xenylla affinis*, Punta Arenas, SCHAFFER, p. 10, Magalha. Reise, n. sp.

## (H.) ORTHOPTERA.

[The following titles relate to *Orthoptera*, viz.:—BOLIVAR (93-98), BORDAGE (100, 101, 102), BORDAS (104-111), BRANCSIK (122, 123), BRINDLEY (131), BRONNIART (134, 135), BURR (141, 142), CUÉNOT (223), DENNY (236), DOLBEAR (261), DOMINIQUE (264), DUBOSCQ (269), FABRE (303), FINOT (336, 337), GIARDINA (409), GIGLIO-TOS (411, 412), GRIFFINI (425, 426, 427), HEYMONS (479), HUTTON (521), INGENITZKY (523, 524), KIMAKOWICZ (580), KŁAPÁLEK (597), KREJČÍ (637), PANTEL (819), PAVLOWA (822), PIERS (869), RAINBOW (890, 891), RODZIANKO (940-943), SAJÓHELYI (955), DE SAUSSURE (416), SCUDDER (993-998), SNOW & HUNTER (1044), ZABRISKIE (1200), ZUBOWSKY (1203, 1204).]

Anatomy of the alimentary canal of 80 forms; classification into *Colotasia* and *Acolotasia* based thereon; BORDAS (104). Division of the Order into two suborders *Acolotasia* (= *Forficulidæ* and *Phasmidæ*) and *Colotasia* (= the other families) in conformity with digestive organs; BORDAS (107).

Sympathetic nervous system; BORDAS (110).

Anatomy and development of *Bacillus rossii*; HEYMONS (479).

The salivary glands; BORDAS (111).

A species with wingless males, winged females; BOLIVAR (96).

Synoptic tables of *Orthoptera* of the Iberian peninsula; BOLIVAR (95).

*Orthoptera* of Bohemia; KREJČÍ (637).

Account in Russian of the *Orthoptera* of St. Petersburg; ZUBOWSKY (1203).

The genera and classification of N. American *Orthoptera*; SCUDDER (998).

## FORFICULIDÆ.

The anomalous *Dyscritina longisetosa*, Westw., is young of a Forficulid, GREEN, p. 205, Ent. Mag. xxxiii.

List of *Forficulidæ* of S. America, FINOT, Act. Soc. Chili, vi, pp. 3-10.

Flight, use of the forceps; KIMAKOWICZ (580).

Larva of *Rasselia antiqua*, parasitic in *Forficulidæ*, RODZIANKO, p. 72, Horæ Soc. ent. Ross. xxxi.

*Anisobasis? kirbyi*, Java, BURR, p. 311, Ann. Nat. Hist. xx, n. sp.

*Brachylabis bifoveolata*, India, BOLIVAR, p. 285, pl. x, fig. 1, Ann. Soc. ent. France, 1897, n. sp.

*Carcinophora castelsi*, India, BOLIVAR, p. 284, t. c., n. sp.

*Chelinoches melanocephalus*, n. var., BURR, p. 315, Ann. Nat. Hist. xx.

*C. punctulatus*, Celebes, BURR, p. 315, t. c., n. sp.

*Echinosema bolivari*, Madagascar, RODZIANKO, p. 154, Wien. ent. Zeit. xvi, n. sp.

*Forcipula*, n. g. for *Labidura quadrispinosa*, Dohrn, with var. n. *lurida*. BOLIVAR, Ann. Soc. ent. France, 1897, p. 283.

*Labia dolicha*, Celebes, p. 311, *fruhstorferi*, Lombok, p. 312, BURR, Ann. Nat. Hist. xx, n. spp.

*Labidura distincta*, Transcaucasus, RODZIANKO, p. 153, Wien. ent. Zeit. xvi, n. sp.

*Neolobophora asiatica*, India, BOLIVAR, p. 285, pl. x, fig. 2, Ann. Soc. ent. France, 1897, n. spp.

*Opisthocosmia forcipata*, n. var., BURR, p. 316, Ann. Nat. Hist. xx.

*Spongophora bormansi*, Bahia, p. 313, *guttulata*, Lombok, p. 314, BURR, t. c., n. spp.

### HEMIMERIDÆ.

*Hemimerus*: habitat, COOK, p. 53, P. ent. Soc. Washington, iv.

### BLATTIDÆ.

Catalogue of *Blattidæ* of South and Central America, FINOT (336).

Development and morphology of ovipositor of *Periplaneta*, DENNY (236).

Regeneration of legs: occurrence of four jointed tarsi; natural history; proportions of sexes, BRINDLEY, P. Zool. Soc. London, 1897, pp. 903-916.

*Aphlebidea*, n. g., *Ectobiidæ*, for *A. brunneri*, n. sp., Australia, p. 56, pl. i, fig. 1, BRANCSIK, Jahresh. Ver. Trencsen. xix.

*Blabera anisitsi*, Paraguay, BRANCSIK, p. 60, pl. i, fig. 5, t. c., n. sp.

*Blatta marginata*, India, BOLIVAR, p. 288, Ann. Soc. ent. France, 1897, n. sp.

*Calolampra depolita*, Australia, BRANCSIK, p. 57, Jahresh. Ver. Trencsen. xix, n. sp.

*Ceratinoptera* (*Allacta*) *crassivenosa*, p. 290, *C. induta*, p. 291, India, BOLIVAR, Ann. Soc. ent. France, 1897, n. spp.

*Chorisoneura argentina*, La Plata, BRANCSIK, p. 57, Jahresh. Ver. Trencsen. xix, n. sp.

*Deropeltis speiseri*, Zambesi, BRANCSIK, p. 245, pl. vii, fig. 3, Jahresh. Ver. Trencsen. xvii, n. sp.

*Ectobia livida* and other *Blattidæ*, notes, RODZIANKO, pp. 112-115, Zapiski Kiev. Obshch. xiv.

*E. tasmanica*, Tasmania, BRANCSIK, p. 244, pl. vii, fig. 1, Jahresh. Ver. Trencsen. xvii, n. sp.

*Epilampra sculpturata*, p. 297, *lineaticollis*, p. 298, India, BOLIVAR, Ann. Soc. ent. France, 1897; *E. caizana*, Bolivia, GIGLIO-TOS, p. 10, Boll. Mus. Torino, 1897, No. 302: n. spp.

*Hemikhyrocera suspecta*, India, BOLIVAR, p. 288, Ann. Soc. ent. France, 1897, n. sp.

*Heterogamia roseni*, Transcaspian, BRANCSIK, p. 59, pl. i, fig. 2, Jahresh. Ver. Trencsen. xix, n. sp.

*Homalopteryx patinifera*, p. 295, *biplagiata*, *cariniceps*, India, BOLIVAR, Ann. Soc. ent. France, 1897, n. spp.

*Loboptera laurenziana*, Argentina, p. 2, *borellii*, Bolivia, p. 3, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.

*Methana antipodum*, Australia, BRANCSIK, p. 58, pl. i, fig. 4, Jahresh. Ver. Trencsen. xix, n. sp.

*Molytria decolyi*, India, BOLIVAR, p. 294, Ann. Soc. ent. France, 1897, n. sp.

*Nyctibora bohlsi*, *confusa*, Paraguay, p. 7, *borellii*, p. 8, *glabra*, p. 9, Bolivia, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.

*Onychostylus*, n. g., p. 289, near *Phyllodromia*, for *O. unguiculatus*, n. sp., India, p. 290, pl. x, fig. 4, BOLIVAR, Ann. Soc. ent. France, 1897.

*Panesthia panteli*, India, BOLIVAR, p. 301, Ann. Soc. ent. France, 1897, n. sp.

*Pellita australica*, Yorke town, BRANCSIK, p. 245, pl. vii, fig. 4, Jahresh. Ver. Trencsen. xvii; *P. brunneri*, Australia, BRANCSIK, p. 60, pl. i, fig. 3, op. cit. xix: n. spp.

- Salganea erythronota*, India, BOLIVAR, p. 301, Ann. Soc. ent. France, 1897, n. sp.
- Spelæoblatta*, n. g., *Periplanetides*, p. 32, for *S. gestroi*, n. sp., Caves in Burma, p. 36, BOLIVAR, Ann. Mus. Genova, xxxviii.
- Stylopyga anthracina*, Zambesi, BRANCSIK, p. 244, pl. vii, fig. 2, Jahresh. Ver. Trencsen. xvii; *S. parallela*, India, BOLIVAR, p. 299, Ann. Soc. ent. France, 1897 : n. spp.
- Temnopteryx martini*, p. 292, pl. x, fig. 6, *alca*, fig. 7, *bicolor*, p. 293, India, BOLIVAR, t. c.; *T. ardua*, p. 3, *continua*, p. 4, Argentina, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302 : n. spp.
- Theganopteryx (Pseudectobia) pallidula*, India, BOLIVAR, p. 287, pl. x, fig. 3, Ann. Soc. ent. France, 1897, n. sp.

## MANTIDÆ.

- Habits of Mediterranean *Mantidæ*, especially *M. religiosa*, and *E. pauperata*, FABRE, Souvenirs, v, chaps. xviii-xxii.
- Embryology and development of young, PAVLOWA (822). Early stages of the embryology of *Mantis*, GIARDINA (409).
- Euryderes*, n. g., p. 63, near *Coptopteryx*, for *E. anisitsi*, n. sp., Paraguay, p. 64, pl. i, fig. 9, BRANCSIK, Jahresh. Ver. Trencsen. xix.
- Gonypteta vicina*, Trichinopoly, BOLIVAR, p. 307, Ann. Soc. ent. France, 1897, n. sp.
- Hierodula suavis*, Zambesi, BRANCSIK, p. 247, pl. vii, fig. 7, Jahresh. Ver. Trencsen. xvii; *H. biroi*, New Guinea, BRANCSIK, p. 61, pl. i, fig. 7, *op. cit.* xix : n. spp.
- Hoplocorypha boromensis*, p. 247, pl. vii, fig. 8, *grandis*, fig. 9. p. 248, Zambesi, BRANCSIK, *op. cit.* xvii, n. spp.
- Humbertiella indica and ceylonica*, distinctions, BOLIVAR, p. 303, Ann. Soc. ent. France, 1897.
- Iridopteryx saussurei*, India, BOLIVAR, pp. 305 & 306, t. c., n. sp.
- Orthodera ministralis* in New Zealand, HUTTON, p. 242, Tr. N. Zealand Inst. xxix.
- O. longicollis*, New Guinea, BRANCSIK, p. 61, pl. i, fig. 6, Jahresh. Ver. Trencsen. xix; *O. laticollis*, Australia, BRANCSIK, p. 246, pl. vii, fig. 5, *op. cit.* xvii : n. spp.
- Orthoderella*, n. g., *Orthoderina*, for *O. ornata*, n. sp., Bolivia, GIGLIO-TOS, p. 13, Boll. Mus. Torino, 1897, No. 302.
- Oxyops borellii*, Bolivia, GIGLIO-TOS, p. 15, Boll. Mus. Torino, 1897, No. 302; *O. paraguayensis*, Asuncion, BRANCSIK, p. 64, pl. i, fig. 10, Jahresh. Ver. Trencsen. xix, n. sp.
- Pachymantis castetzi*, p. 313, pl. x, fig. 9, *amæna*, p. 314, India, BOLIVAR, Ann. Soc. ent. France, 1897, n. spp.
- Pseudomantis menyharthi*, Zambesi, BRANCSIK, p. 246, pl. vii, fig. 6, Jahresh. Ver. Trencsen. xvii, n. sp.
- Rhombodera tamolana*, New Guinea, BRANCSIK, p. 62, pl. i, fig. 8, *op. cit.* xix, n. sp.
- Sphendale infuscata*, male, BOLIVAR, p. 312, Ann. Soc. ent. France, 1897.
- Stagmomantis carolina*, eggs and ootheca, SCUDDER, p. 11, Psyche, viii.
- Statilia maculata, hanoi*, distinctions queried, BOLIVAR, p. 309, Ann. Soc. ent. France, 1897.
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## PHASMIDÆ.

- Catalogue of Australian *Phasmida*, RAINBOW, Rec. Austral. Mus. iii, pp. 37-44.



Rearing a *Phasma* [*Cyphogenia*?] at Singapore, HANITSCH, p. 5, Rep. Raffles Libr. 1897.

Anatomy and development of *Bacillus*, HEYMONS (479).

Anatomy of alimentary canal, BORDAS (105).

Parthenogenesis in *Phasmidae*, BOLIVAR, pp. 242–244. Act. Soc. Espan. 1897.

Regeneration of lost appendages, BORDAGE (102).

Autotomy in *Phasmidae*, BORDAGE (100, 101).

*Leptynia hispanica*, relations with parasite, PANTEL (819).

*Anisomorpha borellii*, Paraguay, GIGLIO-TOS, p. 16, Boll. Mus. Torino, 1897, No. 302, n. sp.

*Aruanoidea ophidiiderma*, Perak, GRIFFINI, t. c., No. 307, n. sp.

*Bacillus gallicus*, parthenogenesis, places of repose, DOMINIQUE, pp. 269–271, Bull. Soc. ouest France, 1897.

*Canuleius delicatulus*, Madagascar, BRANCSIK, p. 66, pl. ii, fig. 12, Jahresh. Ver. Trencsen. xix, n. sp.

*Clemacantha*, n. g., near *Acrophylla*, for *C. regale*, n. sp., Australia, RAINBOW, p. 34, pl. ix, Rec. Austral. Mus. iii, n. sp.

*Diapheromera femorata*, colour, habits, oviposition, SCUDDER, p. 30, Psyche, viii.

*Necrosia papuana*, pl. ii, fig. a, p. 65, *distincta*, p. 66, New Guinea, BRANCSIK, Jahresh. Ver. Trencsen. xix, n. spp.

*Orobia sohri*, Madagascar, BRANCSIK, p. 69, pl. ii, fig. 14, t. c., n. sp.

*Palophus tiaratus*, characters, GRIFFINI, Boll. Mus. Torino, 1897, No. 290, p. 11.

*Paradoxomorpha*, n. g., *Anisomorphidae*, p. 67, for *P. bruchi*, n. sp., Patagonia, p. 68, pl. ii, fig. 13, BRANCSIK, Jahresh. Ver. Trencsen. xix.

*Tæniosoma*, n. g., p. 30, for *T. sanchezi*, n. sp., Philippines, p. 31, BOLIVAR, Act. Soc. Espan. 1897.

## GRYLLIDÆ.

FINOT, *Orthoptères de l'Algérie et de Tunisie, Gryllidæ*, pp. 560–610, Ann. Soc. ent. France, 1896.

*Nervuration* and stridulating organs described, DE SAUSSURE, Biol. Centr.-Amer. Orthopt. pp. 216–220. Stridulating organs of various spp., *Æcanthus*, ZABRISKIE (1200).

*Amphiacustes toltecus*, Mexico, p. 247, pl. xii, figg. 14–17, *caraibeus*, Guadeloupe, p. 248, DE SAUSSURE, Biol. Centr.-Amer. Orthopt., n. spp.

*Amusus mexicanus*, Teapa, p. 245, pl. xii, figg. 11–13, DE SAUSSURE, t. c.; *A. festæ*, Darien, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 301, p. 6;

*A. bolivianus*, S. America, GIGLIO-TOS, p. 45, t. c., No. 302 : n. spp.

*Aphonus flavifrons*, Mexico, pl. xiii, figg. 31 & 32, p. 281, *timidus*, Colombia, p. 282, DE SAUSSURE, Biol. Centr.-Amer. Orthopt., n. spp.

*Apithes nablista*, Colombia, *brevipennis*, Louisiana, *montanus*, pl. xiii, figg. 18–20, Panama, p. 268, DE SAUSSURE, t. c., n. spp.

*Arachnomimus*, n. n. for *Arachnopsis*, Sauss., with *A. cavicola*, n. sp., Guatemala, pl. xii, fig. 23, p. 251, DE SAUSSURE, t. c.

*Calypotrypus hova*, Nossi-Bé, BRANCSIK, p. 261, pl. ix, fig. 7, Jahresh. Ver. Trencsen. xvii, n. sp.

*Cophogryllus boromensis*, Zambesi, BRANCSIK, p. 260, pl. ix, fig. 6, t. c., n. sp.

*Cyrtorhynchus mucilentus*, p. 235, pl. xi, fig. 45, *smithi*, *tibialis*, pl. xi, fig. 40, *championi*, fig. 41, *olmecus*, figg. 42 & 43, p. 236, *pictus*, p. 237, Central America, DE SAUSSURE, Biol. Centr.-Amer. Orthopt., n. spp.

*Diatrypus jansonii*, Nicaragua, pl. xiii, fig. 4, p. 259, *championi*, figg. 2 & 3, *apithoides*, fig. 6, Panama, p. 260, DE SAUSSURE, t. c.

- Ectatoderus aztecus*, Mexico, DE SAUSSURE, p. 230, pl. xi, figg. 25 & 26, *t. c.*, n. sp.
- Ectecous cantans*, Mexico and Guiana, pl. xii, figg. 8-10, p. 244, DE SAUSSURE, *t. c.*; *E. borellii*, Bolivia, GIGLIO-TOS, p. 44, Boll. Mus. Torino, 1897, No. 302 : n. spp.
- Endacustes? darienicus*, p. 7, *E. apterus*, p. 8, Darien, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 301; *E. aztecus*, Teapa, DE SAUSSURE, p. 250, pl. xii, figg. 20-22, Biol. Centr.-Amer. Orthopt., n. spp.
- Gryllodes forcipatus*, Mexico, DE SAUSSURE, p. 229, pl. xi, figg. 29-34, *t. c.*, n. sp.
- Gryllomorphus sacalava*, Nossi-Bé, BRANCSIK, p. 260, pl. ix, fig. 5, Jahresh. Ver. Trencsen. xvii, n. sp.
- Gryllus frontalis*, *frontalis* var. *alata*, *domesticus*, *campestris*, notes, RODZIANKO, Zapiski Kiev. Obshch. xiv, pp. 108-111. *G. assimilis*, figure, Biol. Centr.-Amer. Orthopt., pl. xi, fig. 26.
- G. chichimecus*, Mexico, DE SAUSSURE, p. 226, *t. c.*, n. sp.
- Heterocous*, n. g., near *Podoscirtus*, for *H. auditor*, Panama, pl. xiii, figg. 33 & 34, p. 283, *smithianus*, Mexico, fig. 35, p. 284, n. spp., DE SAUSSURE, *t. c.*
- Homalotrypus*, n. g., near *Anisotrypus*, for *H. boromensis*, n. sp., Zambesi, BRANCSIK, p. 262, pl. ix, fig. 8, Jahresh. Ver. Trencsen. xvii.
- Liphoplus mexicanus*, Amula, p. 231, pl. xi, fig. 37, *krugii*, Cuba, p. 232, DE SAUSSURE, Biol. Centr.-Amer. Orthopt., n. spp.
- Mogoplistes sloasoni*, Florida, SCUDDER, p. 55, Psyche, viii, n. sp.
- Nemobius lineolatus*, macropterous, DOMINIQUE, p. 265, Bull. Soc. ouest France, 1897.
- N. hastatus*, *comanchus*, Mexico, DE SAUSSURE, p. 222, Biol. Centr.-Amer. Orthopt., n. spp.
- Oecanthus pellucens*, note, RODZIANKO, p. 107, Zapiski Kiev. Obshch. xiv.
- O. lineolatus*, Brazil, DE SAUSSURE, p. 254, Biol. Centr.-Amer. Orthopt., n. sp.
- Orocharis gaumeri*, pl. xiii, fig. 26, *ocellaris*, *maxillaris*, Centr. America, fig. 27, p. 273, *amusus*, Brazil, *tibialis*, Mexico, p. 274, pl. xiii, fig. 25, *cayennensis*, Guiana, figg. 23 & 24, *maya*, Mexico, p. 275, *mexicanus*, Teapa, p. 276, *terebrans*, Porto Rico, p. 277, DE SAUSSURE, *t. c.*, n. spp.
- Orochirus corrugatus*, pl. xiii, figg. 29 & 30, *musicus*, Centr. America, DE SAUSSURE, p. 279, *t. c.*, n. spp.
- Paraeneopterus elegans*, Darien, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 301, p. 8, n. sp.
- Paragryllus temulentus*, figures, pl. xii, figg. 2-7, p. 242, *rex*, ♀, p. 243, DE SAUSSURE, Biol. Centr.-Amer. Orthopt.
- Paracanthus sulcatus*, Guatemala, pl. xiii, figg. 12 & 13, p. 263, *olmecus*, Mexico, figg. 16 & 17, *tibialis*, Panama, figg. 14 & 15, *podagrosus*, Guatemala, figg. 7-11, p. 264, DE SAUSSURE, *t. c.*, n. spp.
- Phyllogryllus pipilans*, Guiana, DE SAUSSURE, p. 258, *t. c.*, n. sp.
- Prosthacustes mexicanus*, figure, pl. xii, fig. 1, p. 241, DE SAUSSURE, *t. c.*
- Thamnoscirtus montanus*, pl. xiii, fig. 26, *viridicatus*, Guiana, DE SAUSSURE, p. 240, *t. c.*, n. spp.

## LOCUSTIDÆ.

Conclusion of FINOT's *Orthoptères de l'Algérie et de la Tunisie*, *Decticidæ*, *Ephippigeridæ*, *Heterodidæ*, Ann. Soc. ent. France, 1896, pp. 513-560. Monograph of the *Stenopelmaticæ* of New Zealand, HUTTON, Tr. N. Zealand Inst. xxix.

Food of *Locusta*, *Decticus*, *Platycheila*, RODZIANKO (1942).

Hermaphrodite of *Locusta viridissima*, KLAPÁLEK (597).

- Acanthoplus jallaë*, Zambesi, GRIFFINI, p. 3, Boll. Mus. Torino, 1897, No. 290; *A. speiseri*, p. 258, pl. viii, fig. 9, *stratiotes*, fig. 10, p. 259, Zambesi, BRANCSIK, Jahresh. Ver. Trencsen. xvii : n. spp.
- Amaura latipennis*, Mexico, SAUSSURE & PICTET, p. 322, Biol. Centr.-Amer. Orthopt.; *A. borellii*, Argentina, GIGLIO-TOS, p. 38, Boll. Mus. Torino, 1897, No. 302 : n. spp.
- Amblycorypha guatemalæ*, p. 336, pl. xvi, fig. 3, *tepaneca*, p. 337, Centr. America, SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt., n. spp.
- Anabrus*, the species; SCUDDER, p. 95, Psyche, viii.
- Anaulacomera recticauda*, Mexico, pl. lxvi, fig. 13, p. 343, *angustipennis*, p. 344, SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt., n. spp.
- Anchiptolis borellii*, Bolivia, GIGLIO-TOS, p. 42, Boll. Mus. Torino, 1897, No. 302, n. sp.
- Anthraxes bloyeti*, E. Africa, BRONGNIART, p. 87, Bull. Soc. ent. France, 1897, n. sp.
- Apota*, n. g., *Decticinae*, for *A. notabilis*, n. sp., Oregon, SCUDDER, p. 73, Canad. Ent. xxix.
- Argyrites*, n. g., near *Ceuthophilus*, for *A. mexicana*, n. sp., Amula, pl. xv, figg. 2 & 3, SAUSSURE & PICTET, p. 303, Biol. Centr.-Amer. Orthopt.
- Capnobotes*, n. g., p. 73, near *Drymadusa*, for *C. bruneri*, n. sp., N. America, p. 74, and *Locusta fuliginosa* and *occidentalis*, Thoms., SCUDDER, Canad. Ent. xxix.
- Centrocephalus*, n. g., *Salomonitæ*, p. 176, for *C. viridis*, n. sp., Madagascar, p. 177, BRONGNIART, Bull. Soc. Philom. (8) viii.
- Ceuthophilus aztecus*, Atoyac, SAUSSURE & PICTET, p. 300, pl. xiv, fig. 23, Biol. Centr.-Amer. Orthopt., n. sp.
- Chloroscirtus*, n. g., p. 326, near *Plagiopleura*, for *C. forceps*, n. sp., Guatemala, p. 327, pl. xv, figg. 24-27, SAUSSURE & PICTET, t. c.
- Cymatomera bruneri*, W. Africa, BRANCSIK, p. 257, pl. ix, fig. 2, Jahresh. Ver. Trencsen. xvii, n. sp.
- Ectemna dumicola*, Panama, p. 323, *mexicana*, pl. xv, figg. 28 & 29, *crenata*, Mexico, p. 324, SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt., n. spp.
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- Gallienia*, n. g., p. 131, *Salomonitæ*, for *G. elegans*, n. sp., Madagascar, p. 132, BRONGNIART, Bull. Soc. Philom. (8) viii.
- Glaphyrosoma aztecum*, Teapa, p. 296, pl. xiv, fig. 19, SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt., n. sp.
- Godmanella*, n. g., near *Parableta*, for *G. vaginalis*, n. sp., Mexico, SAUSSURE & PICTET, p. 325, t. c.
- Gryllacris nossibiana*, Nossi-Bé, BRANCSIK, p. 259, pl. ix, fig. 4, Jahresh. Ver. Trencsen. xvii; *G. billinghami*, Victoria, BRANCSIK, p. 84, op. cit. xix; *G. salvini*, p. 306, *cyclops*, p. 308, pl. xv, fig. 9, Panama, SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt. : n. spp.
- Gymnopletron*, n. g., *Ceuthophili*, for *Hemideina longipes*, Col., HUTTON, p. 229, Tr. N. Zealand Inst. xxix.
- Hemideina femorata*, p. 218, *recta*, p. 219, New Zealand, HUTTON, t. c., n. spp.
- Hemisaga saussurei*, S. Australia, BRANCSIK, p. 257, pl. ix, fig. 3, Jahresh. Ver. Trencsen. xvii, n. sp.
- Hemiudeopsylla*, n. g., p. 300, near *Ceuthophilus*, with *H. genicularis*, p. 301, *forrieriana*, pl. xv, fig. 1, Mexico, *platyceps*, California, p. 302, n. spp., SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt.

- Hormilia phthisica*, p. 318, *prasina*, p. 319, pl. xv, fig. 14, Mexico, SAUSSURE & PICTET, t. c., n. spp.
- Hyperophora borellii*, Argentina, GIGLIO-TOS, p. 36, Boll. Mus. Torino, 1897, No. 302, n. sp.
- Ischyroplectron*, n. g., p. 227, *Ceuthophili*, for *C. isolatus*, Hutt., HUTTON, p. 228, Tr. N. Zealand Inst. xxix.
- Isoplectron*, n. g., *Rhaphidophoræ*, for *I. armatum*, p. 237, *calcaratum*, p. 238, n. spp., New Zealand, HUTTON, t. c.
- Liosternus*, n. g., *Agræcinæ*, for *L. vittatus*, n. sp., Australia, BRONGNIART, p. 80, Bull. Soc. ent. France, 1897.
- Macroziphus megapterus*, Borneo, BRONGNIART, p. 130, Bull. Soc. Philom. (8) viii, n. sp.
- Matacus*, n. g., *Phaneropterineæ*, for *M. gracilis*, n. sp., Bolivia, GIGLIO-TOS, p. 37, Boll. Mus. Torino, 1897, No. 302.
- Moristus novæ-guinææ*, New Guinea, BRANCSIK, p. 81, Jahresh. Ver. Trencsen. xix, n. sp.
- Neonetus pilosus*, New Zealand, HUTTON, p. 236, Tr. New Zealand Inst. xxix, n. sp.
- Odontolakis speculata*, p. 181, *bicolor*, p. 185, *alluaudi*, *brunneri*, p. 190, Madagascar, BRONGNIART, Bull. Soc. Philom. (8) viii, n. spp.
- Oncodopus*, n. g., p. 205, *Salomonitæ*, for *O. zonatus*, p. 207, *redtenbacheri*, p. 208, n. spp., Madagascar, BRONGNIART, t. c.
- Onosandrus focalis*, Otago, HUTTON, p. 222, Tr. N. Zealand Inst. xxix, n. sp.
- Oxytethus harmandi*, Bangkok, BRONGNIART, p. 82, Bull. Soc. ent. France, 1897, n. sp.
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- P. goldianus*, Brazil, *id.* p. 295, t. c., n. sp.
- Phoberodema*, n. g., *Mecopodides*, p. 80, for *P. redtenbacheri*, n. sp., Queensland, p. 81, pl. iii, fig. 21, BRANCSIK, Jahresh. Ver. Trencsen. xix.
- Phoberopus*, n. g., *Mimnermites*, p. 297, for *P. championi*, Guatemala, pl. xiv, figg. 20-22, p. 298, n. sp., SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt.
- Phrixa schumanni*, *hoegei*, pl. xvi, fig. 1, p. 334, *maya*, fig. 2, p. 335, Mexico, SAUSSURE & PICTET, Biol. Centr.-Amer. Orthopt., n. spp.
- Plagiopleura arbutorum*, Brazil, SAUSSURE & PICTET, t. c., n. sp.
- Pleiopectron*, n. g., p. 232, *Rhaphidophoræ*, for *P. simplex*, p. 233, *hudsoni*, *pectinatum*, p. 234, *diversum*, p. 235, n. spp., New Zealand, HUTTON, Tr. N. Zealand Inst. xxix.
- Pseudosaga*, n. g., p. 82, *Sagides* ?, for *P. sphinx*, n. sp., S. Africa, p. 83, pl. iii, fig. 22, BRANCSIK, Jahresh. Ver. Trencsen. xix.
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- Rhaphidophora papua*, New Guinea, BRANCSIK, p. 84, Jahresh. Ver. Trencsen. xix, n. sp.
- Salomonitæ*: revision of the group, BRONGNIART (134).
- Salomona francoisi*, hab. ?, p. 149, *kaani*, p. 154, *redtenbacheri*, p. 159, New Hebrides, *pietsti*, p. 161, *raffrayi*, p. 165, New Guinea, *saussurei*, hab. ?, p. 169, BRONGNIART, Bull. Soc. Philom. (8) viii, n. spp.
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*S. pistillata*, habits, music, PIERS, p. 211, P. N. Scotia Inst. ix.  
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*Subria microcephala*, Madagascar, BRONGNIART, p. 84, Bull. Soc. ent.  
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*Tomeophora griffinii*, Bolivia, GIGLIO-TOS, p. 39, Boll. Mus. Torino, 1897,  
 No. 302, n. sp.  
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## ACRIDIIDÆ.

- Notes on habits of N. American *Acridiidae*, SCUDDER (997).  
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 Alimentary canal of *Pamphaginae*, BORDAS (106).  
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*Asemoplus*, n. g. for *Melanoplus montanus*, Brun., SCUDDER, pp. 203 & 206,  
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*Aulocara* and *Ageneotettix* are distinct, SCUDDER, p. 71, Psyche, viii. *Aulo-*  
*cara*, Sc. (= *Edocara*, Sc. = *Coloradella*, Brunn. = *Eremnus*, McN.),  
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*Blepomma*, n. g., near *Acrotylus*, p. 72, for *B. ruginata*, pl. iii, fig. 15, *levior*,  
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- Cephalocema caizana*, Bolivia, *obtusa*, *magna*, p. 20, *gigantea*, p. 21, Argentina, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.
- Cephalotettix*, n. g. for a species from Mexico, SCUDDER, pp. 197 & 204, P. Amer. Ac. xxxii.
- Chortoizetes yorke-townensis*, Australia, BRANCSIK, p. 249, pl. viii, fig. 2, Jahresh. Ver. Trencsen. xvii; *C. jungi*, p. 70, *frater*, p. 71, Australia, BRANCSIK, *op. cit.* xix : n. spp.
- Chrotogonus hemipterus*, subsp. n., *intermedius*, GRIFFINI, p. 10, Boll. Mus. Torino, 1897, No. 290.
- Cirphula jungi*, Australia, BRANCSIK, p. 255, Jahresh. Ver. Trencsen. xvii, n. sp.
- Conalcaea*, n. g. for three species from Mexico and New Mexico, SCUDDER, pp. 196 & 204, P. Amer. Ac. xxxii.
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- Eupnigodes*, n. n. for *Phnigodes*, infra, McNEILL, p. 71, Psyche, viii.
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- Exarna despecta*, Australia, BRANCSIK, p. 77, pl. iii, fig. 19, t. c., n. sp.
- Gonæa nigropunctata*, p. 254, pl. viii, fig. 6, *distincta*, fig. 7, p. 255, Australia, BRANCSIK, *op. cit.* xvii, n. spp.
- Gonyacantha cultrifer*, Zambesi, BRANCSIK, p. 252, t. c., n. sp.
- Gymnoscirtetes*, n. g., for a species from Florida, SCUDDER, p. 195 & 204, P. Amer. Ac. xxxii.
- Hisychius festæ*, Darien, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 301, n. sp.
- Hyalopteryx gracilis*, Argentina, GIGLIO-TOS, p. 22, Boll. Mus. Torino, 1897, No. 302, n. sp.
- Inusia*, n. g., p. 30, near *Leptima*, for *I. gracillima*, n. sp., Bolivia, p. 31, GIGLIO-TOS, t. c.
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- Mestobregma*, Sc. (= *Trachyrhacis*, Sc.), SCUDDER, p. 75, Canad. Ent. xxix.
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- Paradichroplus bilobus*, p. 34, *fusiformis*, p. 35, Argentina, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.
- Paratettix borellii*, Argentina, GIGLIO-TOS, p. 28, t. c., No. 302, n. sp.
- Phædotettix*, n. g. for a species from Mexico and Texas, SCUDDER, pp. 196 & 204, P. Amer. Ac. xxxii.
- Phaulotettix*, n. g. for a species from Mexico, SCUDDER, pp. 197 & 204, t. c.
- Philocleon*, n. g. for *Melanoplus nigrovittatus*, St., SCUDDER, pp. 203 & 206, t. c.
- Phlibostroma*, Sc. (= *Beta*, Brunn.), SCUDDER, p. 76, Canad. Ent. xxix.
- Phlæoba mossambicensis*, Africa, BRANCSIK, p. 249, pl. viii, fig. 1, Jahresh. Ver. Trencsen. xvii, n. sp.
- Phatallotes*, n. g. for *Melanoplus nebrascensis*, Thom., SCUDDER, pp. 202 & 205, P. Amer. Ac. xxxii.
- Plectrotettix*, n. n. for *Plectrophorus*, supra, MCNEILL, p. 71, Psyche, viii.
- Pæcilochroma*, n. g., p. 75, near *Copiocera*, for *P. jucunda*, n. sp., New Guinea, p. 76, pl. iii, fig. 18, BRANCSIK, Jahresh. Ver. Trencsen. xix.
- Pæcilotettix*, n. g. for *Melanoplus picticornis*, Th., SCUDDER, pp. 203 & 206, P. Amer. Ac. xxxii.
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- Schistocerca americana* in Canada, WALKER, p. 89, Canad. Ent. xxix.
- Sinaloa*, n. g. for a Mexican species, SCUDDER, pp. 197 & 204, P. Amer. Ac. xxxii.
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- Staurorhæctus*, n. g., p. 25, near *Pseudostauronotus*, for *S. longicornis*, n. sp., Argentina, p. 26, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302.
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- Stirapleura*, Sc. (= *Pseudostauronotus*, Brunn.), SCUDDER, p. 76, Canad. Ent. xxix.
- Tetanorhynchus humilis*, *borellii*, Argentina, GIGLIO-TOS, p. 18, Boll. Mus. Torino, 1897, No. 302, n. spp.
- Thericles jallæ*, Zambesi, GRIFFINI, p. 7, Boll. Mus. Torino, 1897, No. 290, n. sp.
- Thrinx aridus* and *californicus*, referred to *Heliastus*, SCUDDER, p. 76, Canad. Ent. xxix.
- Tylotropidius gracilipes*, Zambesi, BRANCSIK, p. 256, pl. viii, fig. 8, Jahresh. Ver. Trencsen. xvii, n. sp.
- Tytthotyle*, n. g. *Eremobius*, for *Thrinx maculatus*, Brun., SCUDDER, p. 74, Canad. Ent. xxix.
- Xiphocera menyharthi*, Zambesi, BRANCSIK, p. 252, pl. viii, fig. 3, Jahresh. Ver. Trencsen. xvii, n. sp.

# XIV. ECHINODERMA.

(For 1896 and 1897.)

BY

F. A. BATHER.

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## INTRODUCTION.

I. TITLES. The larger bulk of the present list is due to three factors. First, the obvious one that it is the Record for 1896 as well as for 1897. Second, the actual increase in output of Echinoderm literature, there being 13 more titles for 1896 than there were for 1891 which was an exceptionally heavy year; 1897 too is well above the average. Third, the multiplication of Reviews, such as the *Revue critique de paléozoologie* and the *Rivista italiana di Paleontologia*, many of which contain critical notices of much value.

The list is thus composed: No date (circa 1896), 1 title; 1885, 1;

1888, 1; 1889, 2; 1890, 1; 1891, 9; 1893, 3; 1894, 6; 1895, 19; 1896, 168; 1897, 147: Total, 358. This number is known to be incomplete, as some authors and societies persist in hiding their light under a bushel. The list also contains eight titles marked as unseen, for which fact apologies are tendered. For these and various obscure titles the Recorder has to thank the Concilium Bibliographicum at Zurich, to whose minute accuracy he is glad to bear witness. No-one would expect to find new species of Echinoids described under the title, "Os Molluscos dos terrenos terciarios da Patagonia," especially when the author of the paradox is so esteemed a zoologist as VON IHERING. The number of titles (358) is far from representing the actual number of works herein referred to, such as translations or second editions of works already recorded and analysed, as well as numerous reviews and abstracts that have appeared during the years dealt with.

It was not thought that MAYER-ETMAR's paper (244) demanded more than one number, although it appeared in no less than seven different forms (all of which, nevertheless, are referred to). H. L. CLARK's work on *Synapta vivipara*, however, has already necessitated four entries and will need another next year when the complete work is dealt with. Fortunately for the Recorder all authors do not multiply their papers in this alarming ratio. The trouble caused by a paper is no index of its value, as may further be seen by contrasting the entries under LUDWIG (203) and (210). *A propos* of trouble the repaging nuisance is even worse than wrong dating.

It is very doubtful whether the above analysis according to years is quite correct. Every attempt has been made to give the date of each paper with absolute accuracy, but this is not always possible. It is, however, believed that the dates assigned in the present Record are correct, especially where they differ from the apparent dates. The tendency of authors and societies is to pre-date, of publishers to post-date. As an example may be mentioned the Sitzungsberichte of the Nieder-rheinische Gesellschaft, for the true dates of which the Recorder is indebted to Prof. W. Voigt.

Catch-numbers to the divisions of the Subject-Index are, as before, inserted in square brackets at the end of each title. Those referring to the Systematic portion [IV, A—K] are inserted only when some question of definite importance to the systematist is dealt with in the work.

II. BIOLOGY. Slight improvements have been made in the arrangement of this section, so as to harmonise its subdivisions still further (see CONTENTS).

The papers dealt with are not only numerous but comprise many of importance. A year that saw the issue of LUDWIG's wholly admirable monograph on Mediterranean starfish (210) and the three big volumes that represent the twenty years' work by WACHSMUTH & SPRINGER on North American Crinoidea Camerata (336) will ever be memorable to students of Echinoderma.

A. Among general evolutionary writings those of HAECKEL (116–118), though wild, are often suggestive. Valuable work based on actual examination of specimens has been done by JACKSON (139) & TORNUST (171) on *Palechinoidea*, by GREGORY on *Echinothuriidae* (108) and *Pleniocidaroida* (110), and by LAHILLE on *Scutellidae* (176).

B. Anatomical researches are most abundant in the Holothurians. Here the first place is due to GEROULD's careful study of *Caudina arenata* (100). OSTERGREN has begun what seems likely to prove a long series of valuable papers, chiefly on *Synallactinæ* (253–255). CLARK's work on *Synapta* would be more welcome if less scattered (53). Here also may be mentioned the notes of BARTHELS (18), IVANZOFF (138), and KOEHLER (170). DENDY, working under difficulties, has begun the study of New

Zealand species. In *Echinoidea* the only work of importance has been done on fossils, especially by GREGORY (108, 109, 110), JACKSON & JAGGAR (139, 140), and TORNQVIST (326, 327). The writings of LAMBERT also contain many valuable notes. A small contribution to the anatomy of the generative organs in *Asteroidea* is made by LEIPOLDT (186); but for this group a storehouse of information is afforded by LUDWIG (198, 210), whose monograph is an admirable example of thorough work and lucid arrangement. The anatomy of fossil *Crinoidea* is fully described in WACHSMUTH & SPRINGER (336); BATHER (24) gives a detailed account of *Uintacrinus*; and WELLER & DAVIDSON (341) introduce too briefly a new type of arm-structure in their genus *Petalocrinus*. Among *Cystidea*, more details are needed concerning WHITEAVES' strange genus *Asterocystis* (345) now called *Steganoblastus*. The monograph of HAECKEL (119) on this Class adds little to our knowledge of their structure. Under *Blastoidea* there is little of importance except OEHLERT'S (250) restored diagram of *Pentremitidea*.

Considerable attention is paid by many authors to variation, but the only paper specially dealing with the subject is LAHILLE'S careful study of *Monophora darwini* (176).

C. The chief paper of a purely physiological nature is that by STONE (321) on the pyloric caeca of *Asterias*.

D. Observations on Bionomics are numerous but scattered. MONTICELLI (242) has studied the autotomy of *Cucumaria*; SCHIEMENZ (295) tells us how starfish open oysters; ØSTERGREN (255) proves the locomotion of Holothurians by their anchors; MORTENSEN (244) has discovered an alga that eats the test of an Ophiurid; and LUDWIG (206) has found a new Gastropod in a *Chiridota*. WALTHER (338) discourses charmingly on the life of fossils.

E. The chief paper of Embryological interest is undoubtedly MACBRIDE'S (212) on *Asterina*; this will soon be supplemented by GOTO (see 102). ZIEGLER (355) has notes on the development of *Ophiothrix*, and CLARK (53) on that of *Synapta*. It is pleasing to see the increasing amount of attention paid to post-larval changes. Under this head are important papers by ARNAUD (15), JACKSON (139), LAHILLE (176), LAMBERT (178), MITSUKURI (238) and MORTENSEN (244); but the importance of this method of research is obvious to other workers.

Echinoderms continue as heretofore to furnish numerous data for the study of developmental mechanics. Special reference may be made to the observations of HAMMAR (123), MACBRIDE (213), ANDREWS (7 & 8) and THEEL (325), all of which show the pseudopodial activities of cells and the intimate connection between them.

III. A. The study of faunas is continued by the Prince of Monaco, and much has been done in the N. Atlantic. See KOEHLER & PERRIER. The Echinoderms of the Indian Ocean, dredged by H.M.S. 'Investigator' are in the hands of KOEHLER (167), who, it is stated, will keep all duplicates. Funafuti has not contributed much of interest (see WHITELEGGE 346). MITSUKURI (240) finds *Sphaerothuria* off Japan.

B. Under Geological distribution we note a supposed *Palechinus* from the Silurian of New South Wales (MITCHELL 236); *Hapalocrinus* from the Silurian of Victoria, *Merocrinus* from the Ordovician of England, and *Uintacrinus* from the Cretaceous of England (BATHER 30, 20, 25); NOETTLING (248) introduces Maestrichtian Echinoids from Baluchistan; CREMA (59) additions to the Muschelkalk fauna; OEHLERT (250) studies a Devonian fauna from Spain; and POMPECKJ, the Cambrian Cystids of Tejšovic & Skřej in Bohemia.

IV. That the amount of systematic work has been considerable may be judged from the fact that we here record the proposal of 512 new species and 82 new genera, distributed as follows :—

	Genera		Species	
	new	hypothetical, doubtful or new names only	new	doubtful or unnamed
Holothurioidea ...	5	1	26	0
Echinoidea .....	19	2	112	11
Asteroidea .....	4	0	19	1
Ophiuroidea .....	8	0	71	2
Crinoidea .....	13	0	249	3
Cystidea .....	18	12	13	4
Blastoidea .....	0	0	1	0

There are also many new subgenera, new varieties, and doubtful new forms. But perhaps the most valuable piece of systematic work is that by LUDWIG on the Starfish of the Mediterranean (210), though not a single new species is described therein.

The preceding numbers are no doubt fairly correct, but the Recorder cannot be blamed if he has occasionally missed one of the numerous new names casually introduced in footnotes, reviews, and the like obscure places. The otherwise admirable papers of LAMBERT, SCHLUETER, & TORNIQUIST, were particularly troublesome. The chance of error would be avoided if authors would but give a list of all new names proposed in each paper. So far is this from the case that it is sometimes quite impossible to tell whether a name is new or no.

In the matter of figuring new species the conscience of authors is awakening. Reference to such figure has been given consistently in the Systematic Index. That Index contains a reference to every definite statement made concerning a genus or species in the papers dealt with. When the name of the species is followed by no remark, it probably alludes to a statement of locality or horizon only.

Among general works ZITTEL's *Grundzüge* (356) and the translation by EASTMAN (357) are of value, while HÆCKEL (116) is suggestive. The *Holothurioidea* are studied by DENDY (63) in New Zealand and ÖSTERGREN (253, 254) in Norway, while R. PERRIER (265) has valuable material from N. Atlantic, and notes of importance are furnished by KOEHLER (170) and MITSUKURI (238, 239). Recent *Echinoidea* are studied by KOEHLER (164, 168); the papers of GREGORY (108, 109), JACKSON (139), MEYER-EYMAR (224) and TORNIQUIST (326, 327) on fossil *Echinoidea* have important taxonomic bearings; and detailed work is done by COTTEAU (56), GAUTHIER (98), LAMBERT (179, 180), DE LORIOI (193, 194), NOETLING (248) and SCHLUETER (296, 297). Recent *Asteroidea* are studied by DOEDERLEIN from Amboina, by FARQUHAR (83) from New Zealand, by PERRIER (263) from Bay of Biscay, and notably by LUDWIG (210); the fossils are added to by DEL PRATO (271). Recent *Ophiuroidea* are described by DOEDERLEIN (68) as above, and KOEHLER (169, 164) from Indian Ocean and Bay of Biscay; a classification of the Palæozoic genera is proposed by GREGORY (111). Fossil *Crinoidea* are largely added to by MILLER & GURLEY (232-235), while systematic work of higher order is done by WACHSMUTH & SPRINGER (336). Here also comes valuable information from JÆKEL (144), DE LORIOI (194), OEHLERT (250), and WELLER (340, 341). The *Cystidea* are dealt with by HÆCKEL (118), while POMPECKJ (268) and WHITEAVES (345), add new genera.

It will be seen from the preceding summary that progress is active in all directions, while the amount of really thorough work augurs hopefully for the future. What we all want, but especially Recorders, is more study, less publication, and better arrangement of what is published.

Any further personal remarks by the Recorder are placed, as heretofore, in square brackets.

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  9. ANGELIS D'OSSAT, G. DE & LUZZI, G. F. I Fossili dello Schlier di San Severino (Marche). Boll. Soc. geol. Ital. xvi, pp. 61-68. (July, 1897.) [III, B, ii, d.]  
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  10. ANON. The Association of Species. Nat. Sci. viii, pp. 148-150. (March, 1896.) [II, D, iii.]
  11. —. A Starfish "Struggle-for-lifer." Nat. Sci. x, pp. 9 & 10. (Jan. 1897.) [II, D, vii & viii.]  
Chiefly an account of autotomy in *Asterias richardi* after MARENZELLER (104) Zool. Rec. 1895.
  12. —. An Eastern Question. Nat. Sci. x, p. 10. (Jan. 1897.) [III, A, iv.]
  13. APPELLÖF, A. Faunistiske undersøgelser i Osterfjorden. Bergens Mus. Aarbog, 1896, No. 13, 13 pp. (1896.) [III, A, ii.]

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(8) Gut; HÆCKEL (116) p. 500.—Stomach and cæca of *Pentagonaster placenta* (p. 178), of *Marginaster capreensis* (p. 206), of *Asterina gibbosa* (p. 241), of *Palmipes membranaceus* (p. 266), in *Ophidiaster ophidianus* (p. 312); stomach-cæca and anus in *Plutonaster subinermis* (p. 116); LUDWIG (210).

(10) Longitudinal muscles of body-wall in *Pentagonaster placenta* (p. 178); interbrachial septa in *P. placenta* (p. 178), in *Asterina gibbosa* (p. 242), in *Palmipes lobianci* (p. 271); LUDWIG (210).

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(12) Genital system:—HÆCKEL (116) p. 501, & LUDWIG (198) p. 591.—Of *Luidia ciliaris* and *L. sarsi*, and its connection with side-paxillæ;

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(5) Skeleton:—general discussion; HAECKEL (116) p. 491.—Madreporite of *Euladia* and other palæozoic *Oph.* (p. 1041); "Syngnath," nom. nov., "the united piece formed of mouth-frame and jaw, Mundeckstieck" (p. 1032); structure of arm-skeleton, especially in Palæozoic *Oph.* (p. 1029); ventral arm-plates absent from *Furcaster* (pace Sturtz) (p. 1038); GREGORY (111).

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(8) Gut:—HAECKEL (116) p. 493.

(12) Genital system:—HAECKEL (116) p. 494.

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(10) Modes of union between plates; *op. cit.* pp. 81–84.—Articulation of brachials in *Untacrinus*; BATHER (24) p. 989.—'Syzygy' defined and use of term 'joint' restricted; BATHER (21).—Syzygy in palæozoic and later *Crin.*; WACHSMUTH & SPRINGER (336) p. 81.—Irregular arrangement of syzygies in *Actinometra pulchella*; KOEHLER (163) p. 477.

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(5) Skeleton,—of *Amphoridea*; HAECKEL (116) p. 425: of *Cystidea*, general discussion; HAECKEL (116) p. 445.—Theca of *Amphoridea*; HAECKEL (118) p. 13: of *Cystidea*; HAECKEL (118) p. 78.—Pores in plates of *Amphoridea* and *Cystidea*; HAECKEL (118) p. 19.—"Hydrophores palmées" referred to *Glyptocystide*; HAECKEL (118) pp. 48, 51, 53, 92–94, 152.—Number of arms of *Echinospheera aurantium*; JAEKEL (143) p. 389.—Stem, evolution of pelmatozoan stem; BATHER (26) p. 296.—of *Mitrocystis* described; POMPECKJ (268) p. 504.

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#### (h) BLASTOIDEA.

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(ix) **Echinoderms as food**:—Sea-urchin attacked by *Asterias*; SCHIEMENZ (295).—Echinoids as food of *Cestracion*; SAVILLE-KENT (290) p. 192.—*Craster rubens* and *Solaster papposus* eaten by *Corvus cornix* in hard weather; GRABHAM (103).

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(b) Methods of research:—Of fixing and staining segmenting ova; HAMMAR (123) p. 18.—Of studying larvæ of *Asterina*, osmic acid and Müller's fluid, also corrosive sublimate and glacial acetic acid, embed in celloidin, orientation of sections; MACBRIDE (212) p. 340. Röntgen rays in investigation of Asteroid anatomy; MEEK (226).—Muscles of *Hol.* behave to methylene-blue in same way as do nerves; IWANZOFF (138).—Stupefying, killing, and staining, for Histological preparations of *Caudina urenata*; GEROULD (100) p. 125.

(c) Museum Exhibits and Collections:—Fossil Echinoderma in British Museum; BATHER (28) and GREGORY (112).—Catalogue of Mazzetti coll., *Ech. foss.*; MAZZETTI (225).—Collections of American palæozoic *Crin.*; WACHSMUTH & SPRINGER (336) pp. 4-8, & 18-21.—Collection of fossil *Crin.*, many types; GURLEY (115).

(ii) **Economics**:—Damage to oysterbeds by Starfish; SCHIEMENZ (295).—Commercial value of *Hol.* as food; GRIEVE (114).

(iii) **Bibliography**:—Papers by F. B. Meek; WHITE (343).—Reference to lists of E. Scotland Echinoderms; SIM (306).—Subject-index to literature of Rhine-provinces and Westphalia, down to 1887, with entries under "Echinodermen, Echinoideen, Asteroideen, Ophiure, Crinoideen," and under generic names; RAUFF (273).—Literature of 1891, recent *Echino-derma*, MEISSNER (227).—Abstracts of various papers published in 1893

on Echinoderm palæontology; GAUTHIER (97).—Literature of *Echinoderma* for 1895, with abstracts; LUDWIG (200).—Ditto, for 1896; LUDWIG (211).—Reviews of various papers on segmentation and karyokinesis in *Echinoderma*; ERLANGER (79–82).—Account of recent English writings on experimental embryology; DRIESCH (74).—Literature of Developmental Mechanics, and Abstracts; MAYER (222 & 223).—Literature of Japanese *Hol.*; MITSUKURI (237) p. 405.—Bibliography of Holothurian anatomy with special reference to *Caudina arenata*; GEROULD (100) p. 183.—Bibliography of Palæozoic *Echinoids*; TORNQUIST (171) p. 726; JACKSON (139) p. 244.—Dates of Duncan "Revision of Genera...of Echinoidea" 31 Dec. 1889; of Pomel "Revue des Echinodermes" 1869; and of Desor "Echinologie helvétique"; LAMBERT (179) pp. 494, 495, 505.—Notice sur G. Cotteau; DESMAZIÈRES (65).—Literature of recent *Ast.*, with special reference to Mediterranean species; LUDWIG (216) p. 479.—Literature of *Ast.* of Chile and Magellan; MEISSNER (229) p. 107.—History of literature on *Crin.* esp. palæozoic; WACHSMUTH & SPRINGER (336) pp. 11–31.—Appreciation of C. Wachsmuth's work on palæozoic Crinoids; BATHER (23); and bibliography; KEYES (154).—Bibliography of *Cystidea*; HÆCKEL (118) p. 170.

(iv) **Historical, Popular notions, &c.**:—*Spatangus purpureus* known as Monk's eggs, i.e. eggs of *Squalus squatina*, at Scarborough; GRABHAM (103).

#### (F.) AUXOLOGY.

(i) **General Principles**:—ROULE (283).

(ii) **General Accounts**:—Embryology of *Echinoderma*; ROULE (283).—Echinoderm reproduction and development; BATHER (26) p. 314.—Nature of the metamorphosis of Echinoderm, the Pentactæa theory, ontogeny, &c.; HÆCKEL (116) pp. 349, 361.—Development of *Synapta vivipara*; CLARK (53) p. 280.

(iii) **Formation of Gonads**:—Sexes distinct in *Chirodota dundinensis*; DENDY (63) p. 27.—Oogenesis in *Caudina arenata*, also in parts *Cucumaria frondosa* (pp. 172–178): Spermatogenesis in *Caudina arenata* (p. 178); GEROULD (100).—Development of ova in *Asterias rugispinosa*, peculiarities correlated with temporary brood-pouch; LEIPOLDT (186).

(iv) **Oviposition, Fertilisation, and Segmentation**:—Artificial fertilisation of *Echinus esculentus*; TURBYNE in CHOPIN (49).—Fertilisation of ovum and subsequent changes in *Echinus microtuberculatus*; LAUTENBACH (183).—Breeding-period of Mediterranean *Ast.* discussed (p. 439), as also in detail under the species (*vide Asterias, Asterina, Astropecten, Brisinga, Chætatæster, Echinaster, Luidia, Palmipes*); LUDWIG (210).—Reproduction of *Asterina gibbosa*, no protandry, never parthenogenetic; LUDWIG (210) p. 241.

General account of cellular physiology including references to Echinoderm ovum; WILSON (350).—Protoplasmic connection between cells of segmenting ovum of *Echinus miliaris*, and account of it as previously seen, though not recognised, in *Toxopneustes variegatus*, *T. lividus*, *Sphærechinus brevispinosus*, and other *Ech.*, *Ast.*, and *Oph.*; HAMMAR (123).—Comparison of HAMMAR (123) and later papers, and WILSON (350), with intercellular connection in Lamellibranch ova and that of the "*Echinus* common at Roscoff"; ANDREWS (7).—Pseudopodia of ova of *Arbacia*, *Echinus* [ought this not to be *Strongylocentrotus lividus*?], and two species of *Asterias*; ANDREWS (8).—Polar bodies in living blastula of *Asterias* common at Roscoff, connected by protoplasmic threads; ANDREWS (6) p. 14, f. 16.—

Structure of Echinoid ovum, its fertilisation and karyokinesis; REINKE (278).—Researches on fertilised *Ech.* ova; KOSTANECKI (173).—Centrosomes in fertilised Echinoid ovum; KOSTANECKI (174).—Development of unfertilised ovum in *Echinoidea*; HERTWIG (128).—Position of long axis of spindle in segmenting ovum; ZIEGLER (355).—Centrosome in *Toxopneustes*, *Arbacia*, and *Asterias* sperm-ovum; WILSON (351).

(v) **Larval Stages :—**

(b) Very early stages of (?) *Cucumaria frondosa* as plankton, off N. Greenland; BERGENDAL (37) p. 8.

(c) Larva of *Echinus microtuberculatus* and of *Sphaerechinus granularis*, and bastard larva of *E. microtub.* ♂ and *S. gran.* ♀ : a support of Seeliger (109), Zool. Rec. 1894, against Boveri (25), Zool. Rec. 1893 and (16) 1895; SEELIGER (303).—Larvæ and bastard larva of *Echinus microtuberculatus* and *Sphaerechinus granularis*; SEELIGER (304).

(c & e) *Plutei* from Greenland, *Ech.* and *Oph.*; VANHOEFFEN (333) pp. 242, 275, pl. vi, figg. 8 & 9.

(d) Larvæ of Mediterranean *Ast.*, viz. *Asterias*, *Asterina*, *Astropecten*, *Echinaster*, *Luidia*; LUDWIG (210), pp. 339 & 340.—Development of larva and metamorphosis in *Asterina gibbosa*; MACBRIDE (212).—Development of *Asterias pallida*, orientation of larva; GOTO (102).—Paired lateral gut diverticula in Asterid larva, vestiges of notochordal rudiments; MASTERMAN (220) p. 134.

(e) Larval development of *Ophiothrix fragilis*; ZIEGLER (355), p. 136.

(vi) **Organogeny :—**

(a) *Echinoderma* :—(10) Origin of mesoblast compared with that in supposed typical Archicælomata; MASTERMAN (221) p. 330 footnote.

(12) Gonads :—peritoneal origin in all groups exc. *Crin.*; RUSSO (284).

(b) *Holothurioides* :—(4) Stereom :—Development of spicules in *Chiridota contorta* as usual in the genus, concerning which Dendy's observations (63 p. 50) on *C. dunedinensis* are not new; LUDWIG (204).—Development of spicules in *Caudina arenata*; GEROULD (100) p. 134.

(12) Origin of gonads from peritoneal wall of dorsal lacuna in *Holothuria poli*; RUSSO (284).

(d) *Asteroides* :—(4 & 5) growth of paxillae and of spines, structure of stereom-mesh; LUDWIG (210) p. 67.

(6) Development of stone-canal and dermal branchiæ in *Asterina gibbosa*; MACBRIDE (212) p. 381.—Hydrocircus formed before mouth, *Asterias pallida*; distinction of pore-canal and stone-canal, they open into body-cavity in *A. pallida*, *A. tenera*, *Solaster endeca*, and *Cribrella sanguinolenta*; GOTO (102).

(7) Cælom in *Asterias pallida*, the perihæmal and peribranchial spaces are mesodermal; GOTO (102).

(8) Variations in length of radial stomach-cæca in *Luidia ciliaris* and *L. sarsi* according to age; LUDWIG (210) pp. 84, 104.—Development of stomach and its epithelium in *Asterina gibbosa*; MACBRIDE (212) p. 382.

(9) Development of nervous system and sense organs in *Asterina gibbosa*; MACBRIDE (212) p. 384.

(10) Development of mesenchyme tissue and epithelial muscles in *Asterina gibbosa*; MACBRIDE (212) p. 383.

(11 & 12) Development of ovoid gland, and gonads in *Asterina gibbosa*, with notes on *Amphiura squamata*; MACBRIDE (212) p. 371.

(f) *Crinoidea* :—(5) Growth of arms, esp. palæozoic; WACHSMUTH & SPRINGER (336) p. 82.

(vii) **Post-larval Growth-stages.**

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MITSUKURI (238).—Brepheic *Chiridota contorta* in brood-pouch; LUDWIG (204).—Brepheic *Psolus antarcticus* in brood-pouch; LUDWIG (205).

(c) Growth-stages of Echinoids generally, and the possibility of inferring them from adult structure; exemplified by *Melonites giganteus* (p. 181), *Oligoporus coreyi* (p. 188), *Archæocidaris wortheni* (p. 219), also *Lepidechinus* (p. 228), the last compared with growth-changes in stems of *Pentacrinidæ*; JACKSON (139).—Growth of *Melonites multiporus* by intercalation and growth of plates; JACKSON & JAGGAR (140) p. 138.—Growth-stages of apex in *Toxaster* spp. compared with *Lampadaster*; LAMBERT (178).—Measurements of growth-stages in spp. of *Salenia* from Cretaceous of S. W. France, principles of measurement discussed and exemplified on pp. 2-4; ARNAUD (15).—Neanic *Monodiadema cotteaudi* with age-differences in ambulacral areas; GAUTHIER (98) p. 13.—Growth-stages of *Monophora darwini*; LAHILLE (176) p. 430.

(d) General relations of growth inferred from study of Mediterranean *Ast.*; LUDWIG (210) p. 455.—Growth-stages of madreporite in *Pentagonaster placenta*; KOEHLER (163) p. 455, & (164) p. 67.—Brepheic stages of Mediterranean *Ast.*; LUDWIG (210) p. 339, see also under *Asterias glacialis*, *A. richardi*, *Asterina gibbosa*, *Brisina coronata*, *Chetaster longipes*, *Echinaster sepositus*, *Harelia attenuata*, *Luidia ciliaris*, *L. sarsi* (= *Astellia simplex*), *Marginaster capreensis*, *Palmipes membranaceus*, *Pentagonaster placenta*, *Plutonaster bifrons*, and *P. subinermis*.—Brepheic *Echinaster sepositus* of Phanerozoic appearance, gradual change to adult Cryptozoic stage; LUDWIG (207): for details, see LUDWIG (210).—Brepheic and Neanic stages of *Calyceaster monæcus*; PERRIER (263) p. 28.—Neanic *Pentagonaster placenta* described as *P. minor*; KOEHLER (164) p. 61.—Neanic specimens of *Zoroaster triapinosus*; KOEHLER (163) p. 443 & (164) p. 43.

(e) Centro dorsals in young of *Ophioglyphia imbecillis* and *Ophiomusium familiare*; KOEHLER (169) pp. 303 & 305.—Neanic *Amphiura angularis*; KOEHLER (166) p. 244.—Age of Ephebic *Ophioglyphia texturata*, with table of measurements; MORTENSEN (244) p. 321.

(f) Ontogeny of *Platyer.*; WACHSMUTH & SPRINGER (336) p. 652.

(viii) **Developmental mechanics and Experimental Embryology**:—Account of English and American work; DRIESCH (74).—Reviews of various papers; ERLANGER (79-82).—Cell mechanics and *Ech. ovum*; REINKE (278).—Effect of individual peculiarities in experimental embryology; DRIESCH (73).—Irritability of mesenchyme cells in developing *Echinus microtuberculatus*; DRIESCH (75).—Sperm-ovum segments into portion with spermatozoon nucleus and portion with ovum nucleus; ZIEGLER (355) p. 148.—Centrosome and central spindle in unfertilised but segmenting ova of *Asterias*; HERTWIG (127).—Ova of *Toxopneustes lividus* and *Echinus microtuberculatus* though unripe respond to approach of spermatozoa; SCHENK (294).

*Echinus tuberculatus* ♀ + *Strongylocentrotus lividus* ♂, study of karyokinesis; BOVERI (42).—Bastard-larvæ of *Echinus microtuberculatus* ♂ + *Sphærechinus granularis* ♀; SEELIGER (303).—*Asterias rubens* ♂ + *Echinus esculentus* ♀ and vice versa, ova lived 12 days, not stated if segmentation took place; TURBYNE in CHOPIN (49).

Restoration of balance in outer form of folded blastulæ of *Echinus* and *Asterias*, development of gut in deformed blastulæ and conditions which regulate it; DRIESCH (76).—Development of isolated blastomeres in *Strongylocentrotus lividus*; ZOJA (358).—Blastulæ of *Sphærechinus* and gastrulæ of *Asterias* chopped up to see where power of cells to form complete individuals stops; DRIESCH (72).—Cleavage of ovum under compression in *Echinus microtuberculatus*; ZIEGLER (354) p. 67.

Astrospheres induced in *Sphærechinus* ovum by adding salt to water; MORGAN (243).—Concentrated sea-water induces fragmentation of nucleus

without segmentation of ovum; LOEB (190).—Mitosis induced in ova of *Arbacia* by concentration with magnesium chloride; NORMAN (249).—Ova of *Toxopneustes lividus* treated with diluted sea-water, removal of egg-substance, nevertheless followed by development; RAWITZ (275).—Mesenchyme formation in gastrula of *Echinus microtuberculatus* checked by addition of 1% glycerine to sea-water; ZIEGLER (355) p. 137.—Narcotisation of *Ech.* ova, and study of karyokinesis; DOFLEIN (70).

### III. DISTRIBUTION.

#### A. GEOGRAPHICAL.

##### (i) GENERAL.

Preponderance of Echinoderma in deep-sea dredgings as compared with shallow-water; MURRAY (246) p. 488, footnote.

##### (ii) ATLANTIC OCEAN AND ADJACENT SEAS.

Atlantic,—*Elasipoda*, dredged by "Travailleur" & "Talisman," 2 new genera, 10 n. spp.; PERRIER (265).

Norway,—*S. griegi*, n. sp., W. of Utvaer; ÖSTERGREN (254) p. 4.—Bukkenfjord, list of *Hol.*, *Ast.*, *Oph.*, *Ech.*, 39 spp. in all; GRIEG (113).—Bergen, Osterfjord, *Brisinga endecacnemus* (pp. 4 & 5); *Amphiura norvegica*, *Cucumaria hispida*, *Astropecten andromeda* (p. 5); *Holothuria tremula*, large specimen only 10 fathoms (p. 6); *Astrophyton lincki* on *Muricea* (p. 7); and general list of *Hol.*, *Ech.*, *Ast.*, *Oph.* (pp. 12 & 13); APPELLÖF (13).

Baltic,—plankton, Ophiurid *Pluteus*, not found E. of Fehmarn, no other *Echinoderma*; AURIVILLIUS (17).—*Asteracanthion* and *Ophioglypha* are the only Echinoderms; BRANDT (43).

Limfjord, Denmark, *Ech.*, *Ast.*, *Oph.*, immigrant since 1884; MORTENSEN (244) p. 315.

The German seas, general account of *Echinoderma*; MARSHALL (217).—Elbe mouth, *Echinus esculentus* and *Asteracanthion rubens*; DAHL (62) p. 172.

Coast of Belgium and Netherlands, list of *Hol.*, *Ech.*, *Ast.*, *Oph.*; MAITLAND (215).

Scotland, E. coast,—*Echinus norvegicus*, between the Long Forties and Gt. Fisher Banks, 100 miles N.E. by E. of Aberdeen, 85 miles E. of Buchan Ness, 60 fathoms; 70–80 miles off E. Shetland, 70–80 fathoms; and 70 miles E. of Aberdeen, 75 fathoms; SIMPSON (310).—Aberdeenshire, *Echinus acutus*; SIM (309).

England, E. coast,—Lindisfarne, *Hippasterias phrygiana* vel *Pentagonaster granularis*; SUTTON (322) and DISTANT (67).—Farn Is., *Ophiocoma nigra*; SUTTON (322).—Scarborough, *Ech.*, *Ast.*, *Oph.*; GRABHAM (103).—*Uraster*, *Solaster*, and *Ophiura texturata*, dredged off mouth of R. Colne; SORBY (315) p. 168.

English Channel,—Straits of Dover, dredgings, *Ech.*, *Oph.*, *Ast.*; SAUVAGE (289).—Eddystone, *Ophiactis balli*; Prawl Point, *O. balli* and *Ophiura affinis*; S. of Bolt Hd., *Echinocardium pennatifidum*; ALLEN (2) p. 165.—Plymouth pelagic fauna of two years contrasted, *Plutei* and *Bipinnariæ*; BROWNE (46) p. 170.

List of Echinoderma from Irish Sea; HERDMAN (125) p. 432.

Scotland, W. coast,—*Antedon bifida*, *Palmipes membranaceus*, *Echinus norvegicus*, with other *Oph.*, *Ast.*, *Ech.*, and *Hol.*; SCOTT (301) pp. 175, 189.—Cumbrae, *Amphiura chiajii*; CHOPIN (49).—*Brissopsis lyrifer*,



dredged in quantities; SMITH (314).—Moray Firth, *Luidia sarsi*; SCOTT (302).

Rockall Bank, *Crin.*, *Ast.*, *Oph.*, *Ech.*, *Hol.*; SLADEN (311).

Ireland,—Valencia Id., Co. Kerry, *Strongylocentrotus lividus*, *Holothuria nigra*, *Cucumaria cucumis*, *Ocnus brunneus*, and *O. lacteus*; GAMBLE (94).

French coasts, *Echinoderma*, popular; GRANGER (104).

Mediterranean *Ast.*, general discussion of horizontal distribution, both in Mediterranean and Atlantic (p. 441); bathymetric distribution (p. 446); and nature of habitat (p. 448); see also under the several spp. *Astropecten aurantiacus*, *A. hispidus*, *A. spinulosus*, *A. pentacanthus*, et var. *serratus*, *A. jonstoni*, *Luidia ciliaris*, *L. sarsi*, *Plutonaster subinermis*, *P. bifrons*, *Odontaster mediterraneus*, *Chaetaster longipes*, *Pentagonaster placenta*, *P. hystericus*, *Marginaster capreensis*, *Asterina gibbosa*, *Palmipes membranaceus*, *P. lobianci*, *Hacelia attenuata*, *Ophidiaster ophidianus*, *Echinaster sepositus*, *Asterias tenuispina*, *A. glacialis*, *A. edmundi*, *A. richardi*, and *Beringia coronata*; LUDWIG (210).—Fauna does not include *Echinaster doris* and *E. tribulus*, which = *E. spinosus* of W. Atlantic coast (see IV D); LUDWIG (208).—Diagnoses of *Ast*; LUDWIG (209).—G. of Rapallo, *Crin.*, *Ast.*, *Oph.*, *Ech.*, *Hol.*, with *Echinaster sepositus*, var. nov. *mediterraneus*; MARCHISIO (216).—Sea of Marmora, *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.*; OSTROUMOV (256) pp. 50 & 51 and passim.

B. of Biscay,—*Ophioglypha carnea*; between Pico and São Gorge, *Ophiactis abyssicola* and *Ophiacantha aristata*; Atlantic, *O. setosa*; Str. of Pico-Fayal, *Ophiocoma forbesi*; and other Atlantic species of *Oph.* including n. spp. *Ophiocoma longispinum*, *O. scutatum*, *Amphiura denticulata*, *A. longispina*; KOEHLER (165).—B. of Biscay, Echinoderms collected by the 'Caudan', species new to locality, viz. Atlantic spp., *Odinia robusta*, *Coronaster antonii*, *Neomorphaster parvifolius*, *Pentagonaster perrieri*, *Astrogonium annectens*, *Dorigona arenata*, *D. subspinosa*, *Pontaster marionis*, *Ophioglypha lyngmanni*, *Amphiura duplicata*, *Trigonocardia albida*, *Phormosoma placenta*, *Rhizocr. rawsoni*, *Lætmogone Wyvillethomsoni*; extra-Atlantic spp., *Ophioglypha irrorata*, *O. minuta*, *Ophiacantha rosea*, *Phormosoma luculentum*, *Ankyroderma danielsseni*; Arctic spp., *Ophiacantha bidentata*, *O. spectabilis*, *O. abyssicola*, *Ophiactis balli*, *Amphilepis norvegica*, *Echinus alexandri*, *Holothuria intestinalis*, *H. tremula*, *Echinocucumis typica*; Mediterranean spp., *Tethyaster subinermis*, *Pentagonaster placenta*; n. spp., *Zoroaster trispinosus*, *Cribrella biscayensis*, *C. caudani*, *Myxaster perrieri*, *Pentagonaster minor*, *P. kergueleni*, *Ophioglypha thouletii*, *Ophiocoma ledanteci*, *Ophiactis corallicola*, *Ophiocoma relictus*, *Ophiacantha simulans*, *O. aristata*, *Ophiomitra globulifera*, *Astronox locardi*, *Antedon flava*, *Holothuria roulei*, *Stichopus pallens*, *Benthogone rosea*, *Psolus tessellatus*; KOEHLER (163 & 164).

List of *Ast.* dredged by 'l'Hirondelle' in B. of Biscay, off Azores, and Newfoundland, with bathymetric distribution, and nature of bottom; PERRIER (263).—Azores, *Sperosoma*, n. g.; KOEHLER (168).

E. Atlantic,—Holothurians dredged by 'Princesse Alice'; HÉROUARD (126).—4020 metres, *Ophiomusium planum*; list of *Oph.* collected by 'Princesse Alice' including n. spp., *Ophiurus abyssalis*, *Amphiura richardi*, *A. grandis*, *Ophiacantha lineata*, *O. rufescens*, *O. cordifera*, and *Ophiotrema alberti*; KOEHLER (166).

Greenland, Karajak-Fjord, *Ech.*, *Ast.*, *Oph.*, *Hol.* (p. 235), and general list (p. 243); VANHOEFFEN (333).—N. Greenland, *Hol.*; BERGENDAL (37) pp. 8, 11.

Nova Scotia, list, with notes; HONEYMAN (131).—Grand Bank and B. of Fundy, *Crin.*, *Oph.*, *Ech.*; HONEYMAN (132).

Bermudas, *Hol.*, *Ast.*, *Oph.*, *Ech.*; BRISTOL (44).—Jamaica, *Hol.*; CLARK (52).—Kingston harbour, *Oreaster reticulata*, *Toxopneustes variegatus*, *Diadema setosum*, etc.; DUERDEN (77).

## (iii) INDIAN OCEAN AND ADJACENT SEAS.

*Oph.* collected by 'Investigator,' preliminary note; KOEHLER (167): they include the following Atlantic spp., *Ophiomusium validum*, *O. planum*, *Ophiernus adpersus*, and *Ophiocamax fasciculata*; note also *Astronyx loveni* of Norway and Japan, also n. spp. of the following genera, *Ophiotypa*, *Ophiopyrgus*, *Ophiomastus*, *Ophioglypha*, *Ophiomusium*, *Ophiopyren*, *Ophiolypus*, *Ophioceramis*, *Ophiozona*, *Ophiopeza*, *Pectinura*, *Ophiactis*, *Amphiura*, *Ophiochiton*, *Ophiacantha*, *Ophiomitra*, *Ophiothrix*, *Ophiomyza*, *Gorgonocephalus*, *Ophiocreas*; KOEHLER (169).

E. coast of Africa.—*Hol.* collected by Stuhlmann, incl. *H. signata*, *Chirodota rufescens*, *Orcula curumiformis*, *Synapta ooplax*, also *Chirodota stuhlmanni*, n. sp.; LAMPERT (181).—*Ast.*, *Oph.*, *Ech.* coll. Stuhlmann; PFEFFER (267).

Ceylon,—*Palmpipes sarasini*, n. sp.; LORIOL (196) p. 11.

Amboina and Thursday Is.—*Oph.* 35 spp. of which 8 new, note specially *Ophioglypha sinensis* and *Ophiochaeta hirsuta*; DOEDERLEIN (68).—*Ast.*, 26 spp. of which 1 new (*Bunaster*, n. g.), and general remarks on Indo-Pacific *Ast.* esp. *Culcita*; DOEDERLEIN (69) p. 303.

## (iv) PACIFIC OCEAN AND ADJACENT SEAS.

Puget Sound, *Heliaster*, *Asterias*, *Cucumaria* (p. 156); *Dendraster excentricus*, *Asterias*, *Cucumaria* (p. 158); *Holothuria californica*, *Synapta*, *Cribrella*, *Solaster*, *Asterias*, *Ophioglypha* (p. 162); *Strongylocentrotus*, *Psolus* (p. 164); HARRINGTON & GRIFFIN (124).—Vancouver, *Ast.* with n. spp. *Crossaster vancouverensis*, *Asterias koehleri*, *A. saanichensis*; LORIOL (196) p. 12.

Chile and Magellan, *Ast.*, incl. n. spp. *Asterias platei*, and *A. fernandensis*; MEISSNER (229).—Chile, *Ech.*; MEISSNER (228).

Kermadec Is. (Raoul or Sunday Is.), *Tripneustes variegatus*, *Echinometra lucunter*, *Ophiopeza danbyi*, *Asterias rodolphi*, *Asteropsis imperialis*, *Ophiaster*, sp.; FARQUHAR (83).

New Zealand,—deep sea, *Ast.* (p. 7), *Crin.* (p. 10), *Ech.* (p. 11), *Hol.* (p. 20), *Oph.* (p. 24); HAMILTON (122).—Various localities, *Echinocardium australe*, *Strongylocentrotus tuberculatus*, *S. eurythrogrammus*, *Centrostephanus rodgersi*, *Pectinura maculata*, *Amphiura pusilla*, *A. elegans*, *Astrogonium kuttoni*, *Asterina regularis*, *Stichaster polyplax*, and others; FARQUHAR (83).—*Hol.*, revised list; DENDY (63).

New S. Wales, *Stichopus mollis*, hitherto known only from New Zealand; WHITELEGGE (347).—Houtman's Abrolhos, Holothurian fauna; SAVILLE-KENT (290) p. 149.

Japan,—list of *Hol.*, with extra-Japanese habitats quoted, and literature; MITSUKURI (237).—Sagami, *Sphaerothuria bitentaculata*; MITSUKURI (240).—Echinoderms dredged by long-line in Sagami Bay, *Zoroaster*, n. sp., *Asthenosoma*, *Pourtalesia*, *Latmogone* sp., *Metacrinus rotundus*; IJIMA (137) p. 42.—Near Misaki, *Nyodemon yimai*, n. sp.; MITSUKURI (239).—Shoal Hamashima in Kagoshima B., *Ophiopsila* sp. in crowds; MITSUKURI & HARA (241).—*Echinaster spinosus*, a W. Atlantic sp. found off Japan; ANON. (12).

## (v) ARCTIC OCEAN AND ADJACENT SEAS.

Inglefield Gulf, *Ech.*, *Ast.*, *Oph.*, *Crin.*; OHLIN (251) p. 204.

## (vi) ANTARCTIC OCEAN AND ADJACENT SEAS.

Comparison of *Echinoderma* of deep-water and shallow-water of Kerguelen Region with those of other Regions; MURRAY (246).

## B. GEOLOGICAL.

## (i) GENERAL.

Remarks on geological history of Echinoderms; GAUDRY (96).—General palæontological data afforded by Echinoderma, with table of distribution; HÆCKEL (116) p. 359. The imperfection of the Geological record as exemplified by Crinoidea; WACHSMUTH and SPRINGER (336) p. 167.—Distribution of *Crinoidea* (p. 146), *Cystidea* (p. 158), *Echinoidea* (p. 202), *Holothurioidea* (p. 204); ZITTEL (356).—See also ZITTEL-EASTMAN (357).

## (ii) CAINOZOIC.

(a) **General**:—Upper Tertiaries, British Isles, *Crin.* (p. 6), *Ech.* (p. 7), *Oph.* (p. 11), *Ast.* and *Hol.* (p. 12); BELL (33).—Discussion of geological distribution of *Ech.* in coll. Mazzetti, mostly Eocene and Miocene from Salto and Montese, Italy; MAZZETTI (225).—Tertiary of Piedmont, list of 53 spp. and vars. of *Ech.*, with *Brissopsis lutissimus*, *B. craverii*, Placentian, *Linthia peolæ*, *L. cevense*, Pliocene, *Schizaster pyriformis*, Tertiary, *S. braidensis*, Placentian, *Spatangus manzonei*, Astian, n. spp.; BOTTO-MICCA (41) p. 344.

(b) **Pleistocene**:—Vacant.

(c) **Pliocene**:—Of Piacentino and Parma, Italy, *Astrogonium* sp. and *Astropecten linati*, n. sp.; PRATO (271).—Of Parma, list of *Ech.* incl. *Psammechinus monilis*, n. var. *depressa*, *Clypeaster guidotti*, n. sp.; VINASSA DE REGNY (335) p. 141.—*Echinolampas hemisphericus*, above sands with *Cyprina æqualis* of Monte Mario, Rome; MELI (230) p. 164.—Monte Mario, *Echinocyamus pusillus*; MELI (231) p. 149.—Dahra (Algeria), *Ech.*; BRIVE (45).—Central America, *Encope chilensis*; IHERING (136) p. 338.

(d) **Miocene**:—France, monograph of *Spatangus*, with list from other Miocene localities; COTTEAU (56).—Pierre-longue near Avignon, *Ech.*; DEPÉRET (64) p. 522.—Brittany, *Hipponoe* & *Echinolampas*; SEUNES (305).—Gombio, Italy, *Astropecten*; PRATO (271).—Lemberg, Galicia, *Ech.*; ŁOMNICKI (192) p. 34.—Letkés, Hungary, *Clypeaster acuminatus*, *C. reidii*, *C. sp.*; FRANZENAU (87) p. 20.

Middle Miocene, "terreno a *Clypeaster*," Calabria, *Ech.*; FUCINI (92) p. 61.—(? Helvetian) of Vigoleno and Ciano d'Enza in Piacentino, Italy, *Ech.*; VINASSA DE REGNY (334) p. 154.—Helvetian, "pietra da Cantoni," Rosignano and Vignale, Monferrato, Italy, *Ech.*, with *Pericosmus pedemontanus* and *Schizaster ozzanensis*, n. spp.; ALESSANDRI (1) pp. 69–84.—Langhian or Helvetian, Portugal, *Ech.*, n. spp., *Arbacina mutellensis*, *Scutella lusitanica*, *S. roquettei*, *Clypeaster palencaensis*, *C. mutellensis*, *C. delgadoi*, *Brissopsis lusitanicus*, *Opissaster cotteri*, and 20 other spp., discussion of age on p. 48; LORIOU (193).—"Schlier" of San Severino (Marche), *Hemipneustes italicus*; ANGELIS D'OSSAT & LUZZI (9) p. 66.

Tortonian,—Monterenzo, Bologna, *Cidaris tessurata*; SANGIORGI (288) p. 180; Near Orleansville, Algeria, lists of *Ech.*, chiefly *Clypeaster*; REPELIN (279) pp. 172–181.—Upper Burdigalian,—*Ech.* and *Crin.* with *Antedon anglesensis*, *A. pellati*, *A. allardi*, *A. fontannesii*, *A. depereti*, and *Pentacr. miocenicus*, n. spp.; LORIOU (194); Near Angles (Gard) and St.-Etienne-du-Grès (Bouches du Rhône), *Ech.* and *Crin.*, presence of *Pentacr.* columnals does not prove depth as supposed by SINARD (247, Zool. Rec. 1893); PELLAT (260).—Bas Languedoc, *Ech.* (Burdigalian), pp. 204, 205, 206, 210; (Vindobonian), pp. 218, 224, 226, 232; ROMAN (261).

(e) **Oligocene**:—Of Gaas (Landes), list of *Ast.* and *Ech.*; RAULIN (274).—Transylvania, lists of *Ech.*; KOCH (162) pp. 294, 313.—Patagonia, *Scutella putigyonensis*; IHERING (136) p. 337.—Aquitanian and Langhian,

"Globigerina Limestones," Malta, *Pentacrinus gastaldi* and 24 spp. *Ech.*; COOKE (55), pp. 510 & 511.

Middle Oligocene, "Septarien-thon," Cassel in Hesse, *Schizaster acuminatus*; KAYSER (153).—Of Laufen in Berner Jura, *Ditremaster* (?) sp.; HAGMANN (119).

(f) **Eocene**:—Aude, *Ech.* discussed; LAMBERT (179).—Saint-Palais (Charente-Inférieure), *Sismondia marginalis*, var. *minor*; COURJAULT (58).—Horizons of species of *Sismondia*; FOURTAU (86).—Württemberg, lists of fossils, various localities; ENGEL (78).—Venetia, Mte Pulli, *Psammochinus* sp. (p. 144), and Ronca, *Ech.* (pp. 110 & 111); GREGORIO (105).—Transylvania, lists of *Ech.* & *Crin.*; KOCH (162) pp. 252, 258, 267, 271, 282.—Haskovo, Bulgaria, *Ech.*; BONTSCHEFF (40) Table facing p. 324, pp. 326, 327, 354, 355, 368–373.—Nummulitic limestone of Albert in Roumania, *Conoclypeus conoideus* and *Conocrinus piriformis*; POPOVICI-HATZEG (270) pp. 248 & 249.—Central Caucasus, *Ech.*; FOURNIER (85) pp. 179, 182.—Egypt, *Fibularia lorioli* and *Mistechinus mayeri*, *Euspatangus caiensis*, n. spp.; LORIOL (196) p. 4.—Patagonia, *Hyechinus patagonicus*, *Echinarachnius juliensis*; IHERING (136) p. 336.

Australia, list of *Ech.*, *Ast.*, *Crin.*; TATE & DENNANT (324) p. 130.—Murravian?, Bordertown, S. Australia, *Psammochinus woodsii*, *Hemiasper planedecivis*, *Lovenia forbesi*, *Scutellina patella*; CLARK (50) p. 111.—Lower Maude series, Lower Moorabool, Victoria, *Fibularia*; HALL (120) p. 45; Muddy Creek and Spring Creek, list of *Ech.*; TATE & DENNANT (324) p. 146.—Table Cape beds, Tasmania, list of *Ech.*; TATE & DENNANT (324) p. 132; & PRITCHARD (272) p. 143.

### (iii) MESOZOIC.

(a) **General**:—Oxfordian (pp. 101, 112, 118), Bajocian (pp. 110, 114), Bathonian (p. 117), Neocomian (p. 128), Aptian (pp. 132, 138), Albian (p. 140), Cenomanian (pp. 157, 163), Senonian (pp. 158, 160, 164), of Central Caucasus; FOURNIER (85).

(b) **Cretaceous**:—Of Seine-Inférieure, list of 144 spp. of *Ech.* including *Holaster integer* and *Micraster laxoporus*; COULON (57).—S.W. France, list of *Salenia*, *S. heberti* from Upper Campanian of Talmont (Charente-Inf.), also *S. rejaudryi*, Lower Campanian, *S. maxima*, Mid. Campanian, and *S. pesmei*, Dordonian, all Charente, n. spp.; ARNAUD (15), see esp. pp. 29 & 30.

(1) Upper:—Baltic chalk classified, with list of *Ech.* according to zones, *Brisopneustes danicus* and *B. suecicus*, n. spp.; *Marsupites* in Sweden; SCHLÜETER (297).—Zones of, at Georgsberg, Bohemia, list of *Crin.*, *Ech.*, *Ast.*; ZAHALKA (353) p. 10.—Madagascar, *Ech.*; NEWTON (247) pp. 311, 313.

Maestrichtian, Mari Hills, Baluchistan, *Ech.*; NÖTLING (248) p. 11.

Danian,—"Craie de Ciply," discussion of *Ech.* and of geological horizon (p. 186), the following n. spp. *Cidaris montainvillensis*, *Macrodiadema cipliensis*, *Salenia belgica*, *Gauthieria broeckii*, *Rachiosoma grossouvrei*, *Cyphosoma inopa*, *C. rutoti*, *Caratomus rutoti*, *Echinocorys belgicus*; LAMBERT (180).

Senonian,—Co. Antrim, *Ech.*, *Crin.*; HUME (134) pp. 545, 546, 551, 552, 553, 557, 559, 562, 568.—Between Sewerby and South Sea Landing, Flamborough Head, *Marsupites* has a range of about 50 feet, just above *Actinocamax quadratus*; LAMPLUGH (182) pp. 82 & 83.—N. Germany and Baltic, distribution of *Ech.*; STOLLEY (320), passim, esp. p. 272.—Lüneburg and Lägerdorf, horizons of *Ech.* esp. *Micraster* spp. discussed; STOLLEY (319).—Dieppe, *Micraster fortini*, n. sp.; LAMBERT (178) p. 328.—Elbeuf,

*Gauthieria radiata*, var. *granulosa*: Dieppe, *Micraster fortini*; FORTIN (84).—Madagascar, various *Ech.* with n. spp., *Lampadaster gauthieri*, *Menuthiaster cotteau*, *Micraster meunieri*, *Echinocorys duchesnei*, and *Infulaster boulei*; LAMBERT (178).—"Trigonoarca beds," Rautankupam, Pondicherry, India, *Hemiaster tamulicus*, n. sp., and *H. pullus*; KOSSMAT (172) pp. 95 & 96.—Lower Senonian,—of England and Westphalia, abundance of *Uintacrinus*; BATHER (35); Valley of Méhaigne, Belgium, *Ech.*; RUTOT (286) pp. 39, 42.—"Niobrara chalk," *Uintacrinus* at Smoky Hill near Elkader, Kansas; WILLISTON (348) p. 110, & (349).

Turonian,—*Hippurite limestone*, lists of fossils with numerous *Ech.*; TOUCAS (328).—"Scaphitenplaner" of Oppeln, Silesia, *Ech.*, including *Ananchytes ovatus*; LEONHARD (187) pp. 40-42.—"Seewerkalk," N. of Klönthal, Switzerland; BURCKHARDT (47) p. 88.—"Formation des Gaa," Turonian? near Chatillon-en-Diois, France, *Ech.*, *Crin.*; LORY & SAYN (197) p. 13.

Cenomanian and Turonian,—Lebanon, *Ech.* including n. spp., *Hemicidaris ghazirensis*, *Diplopodia blankenhorni*, *Psammochinus zumoffeni*, *Pyrina lamberti*, *Echinobrissus ghazirensis*, *Toxaster libanoticus*, *Linthia fraasi*, *Hemiaster ibelensis*, and *H. kfourensis*, also the following previously unrecorded from district, *Diplopodia variolaris*, *Holactypus cenomanensis*, *H. excisus*, *Enallaster delgadoi*, *Micraster decipiens*; LORIOL (195).

Cenomanian,—Ventnor, *Ech.* (p. 105), at C. La Hève, *Ech.* (p. 121), at St Jouin, *Ech.* (p. 125), Craie de Rouen, *Ech.* (p. 132), and various *Ech.* (p. 143); JUKES-BROWNE & HILL (150).—Groschowitz, *Catopygus carinatus*, and Sabschutz, *Pygurus lampas*, Silesia; LEONHARD (187) pp. 28 & 29.—El Golea, S. Algeria, *Ech.*; PERON (261).—"Chlomeker Schichten," Bohemia, *Ech.*, *Ast.*; FRIC (91) p. 71.

(2) Lower:—Berriasian, *Ech.* (p. 49), Neocomian, *Ech.* (pp. 57 & 58) Urgonian, *Ech.* (p. 66), Albian, *Ech.* (p. 80), N. of Klönthal, Switzerland; BURCKHARDT (47).—Wealden to Albian of Barcelona, zonal lists with spp. of *Heteraster*, *Epiaster*, *Echinospatagus*, *Pseudodiadema*, *Pygaulus*, *Pyrina*, *Collyrites*, *Discoidea*, *Salemia*, *Catopygus*; ALMERA (3).

Albian,—of S.E. France, *Ech.*; KILIAN (157) pp. 792-797.—Escagnolles, Nizza, and W. Liguria, *Ech.*; PARONA & BONARELLI (258) pp. 64-66.

Aptian,—*"Upper Greensand,"* Dorset, list of *Ech.*, *Crin.*; JUKES-BROWNE (149) p. 101.—*"Chert and Greensand"* of Warminster, list of *Ech.* (p. 264), *"Rye Hill sand,"* list of *Ech.* and *Crin.* (p. 270), with note (p. 271), and doubtful *Catopygus columbarius* (p. 273); JUKES-BROWNE (148).—Of S.E. France, *Ech.*; KILIAN (157) pp. 752-771.—Gault of La Palud-de-Moustiers (Basses-Alpes), *Ech.*; KILIAN (158) p. 894.—Zapatoca in Cordilleras of Bogota, *Toxaster raulini*; GERHARDT (99) pp. 132, 189.

Neocomian and Upper Greensand,—*Ech.* in drift at Moreseat, Aberdeen; SHARMAN & NEWTON (306) p. 254.—Neocomian of Isère, *Eugeniocr. geveyi*, n. sp.; LORIOL (196) p. 24. Valanginian and Hauterivian,—of Escagnolles (Alpes-maritimes); KILIAN & ZUCHER (160) pp. 963-965; Of Bas-Languedoc, *Ech.*, *Crin.*; ROMAN (281) pp. 124, 130, 135.—Valanginian, Hauterivian, Barremian of Moustiers Ste-Marie (Basses Alpes), *Ech.*; KILIAN & LEENHARDT (159) pp. 973-980.—Of S.E. France, *Ech.*, *Crin.*; KILIAN (157) pp. 721-729, 733-737, & 738-746.

(c) **Jurassic**:—Württemberg, lists of fossils, various localities; ENGEL (78).

(1) Upper:—Inowrazlaw, Posen, occurrences of *Ech.*, *Crin.*; GALLINKE (93).—Tithonian,—of Bas-Languedoc, *Crin.*, *Ech.*; ROMAN (281) pp. 87, 88, 329; Tunis, *Metaporphinus convexus*, and *Proholaster auberti*, n. g. et sp.; GAUTHIER (98) p. 17.—Portlandian, Tithonique,—at Sisteron (Basses-Alpes) and other localities in S.E. France, *Ech.*, *Crin.*; KILIAN (157) pp. 678-688.—? Kimeridgian,—S. Tunis, *Pygurus meslei*, *Hemicidaris*

*seguellensis*, *Acrosalenia meslei*, n. spp.; *Holactypus corallinus*, *Monodiadema cotteausi*, *Rhabdocidaris? orbignyana*; and *Millericrinus meslei*, n. sp.; GAUTHIER (98).

(2) Middle:—Oxfordian to Portlandian,—of Escagnolles (Alpes-mari-times), *Ech.*, *Crin.*; KILIAN & ZURCHER (160) pp. 960–962.—Oxfordian,—St Ives, Hunts., *Pseudodiadema jessoni*, n. s.; GREGORY (107).—Tunis, *Cyclolampas volzi*, *Collyrites friburgensis*, *Pleurodiadema stutzi*; GAUTHIER (98) p. 19.—Crinoid Limestone with *Pentacr. jurensis* associated with *Hildoceras bifrons*; STEFANO (316) p. 195.—“Terrain à Chailles” and Rauracian of Isteiner Klotz, S.W. Baden, *Ech.*, *Ast.*, *Crin.*; HUG (133) pp. 392, 403–405.—Callovian and Oxfordian,—Bas-Languedoc, *Crin.*, *Ech.*; ROMAN (281) pp. 55 & 65.—Callovian,—Acque Fredde, Lago di Garda, Italy, 4 spp. of *Cidaris*, indet. spines; PARONA (257) pp. 394 & 395.—Lower Callovian, Chanasien, Savoy, list of *Crin.* and *Ech.* with comparative distribution (p. 46), and notes (p. 78); PARONA & BONARELLI (259).

(3) Lower:—Madagascar, *Stomechinus* aff. *bigranularis*; NEWTON (247) p. 315.—Bathonian,—boulders of Malm in W. German plain contain *Crin.* columnals and *Cidaris* plates, origin discussed; SCHLUETER (298).—Braun Jura,—“*Murchisonæ* beds, *Sowerbyi* beds, *Humphriesi* beds,” Baden, *Ech.*, *Ast.*, *Crin.*; SCHALCH (293) pp. 574, 585, 604.—Bajocian,—Bas-Languedoc, *Crin.*, *Ech.*; ROMAN (281) p. 47.

(d) **Lias**:—(?) Madagascar, *Pentacr.* and *Acrosalenia*; NEWTON (247) p. 315.

Upper,—“Lower *Leda ovum* beds,” *Archæodiadema thompsoni*, n. g. et sp.; GREGORY (106).

Middle,—“Bündner Schiefer,” between Hinter- and Vorderrhein, *Pentacr. cf. basaltiformis*; ROTHPLETZ (282) pp. 34 & 54.

Lower,—“Bündner Schiefer” between Hinter- and Vorderrhein, *Pentacr. angulatus*, *P. psilonoti*; ROTHPLETZ (282) pp. 35 & 54.—“*Planorbis* beds,” Kalksburg near Vienna, *Pentacr. cf. psilonoti*; TOULA (330) p. 218.

(e) **Trias**:—“Brachiopodenkalk” of Grignagebirge, S. Alps, *entrochus*; PHILIPPI (266) p. 716.—Muschelkalk,—near Jena, *Crin.*, *Ech.*, *Ast.*, *Oph.* list with horizons (p. 100) and references, *passim*; WAGNER (337).—Of Recoaro, *Aspidura italica*, and *Apiocrinus recubariensis*, n. spp.; CREMA (59). Ditto, *Millericrinus*; BATHER (27).—G. of Ismid, Asia Minor, *Encrinus*; TOULA (329) p. 158.

#### (iv) PALÆOZOIC.

(a) **General**:—Distribution of Crinoidea Camerata in Palæozoic rocks of N. America, and comparison with other localities (p. 171), range in time of all *Crinoid* families (p. 172), followed by description of all American *Camerata*; various localities described (pp. 19 & 20); WACHSMUTH & SPRINGER (336).—Geological history of N. American *Actinocrinida*; MILLER & GURLEY (234) p. 73.—List of Palæozoic Crinoids of Cornwall, all stem-fragments, *Cyathocrinus* (?) *carinatus*, and *C.* (?) *leptos*, n. spp.; COLLINS (54).

(b) **Permian**. Vacant.

(c) **Permo-Carboniferous**. Vacant.

(d) **Coal Measures**:—Upper,—of Poteau Mt., Indian Territory, and Scott Co., Arkansas, *Crin.* (pp. 236, 274): Lower,—White Co. and Pope Co., Arkansas, *Crin.* (pp. 236, 275); SMITH (313).

(d & e) Carboniferous, Kansas, complete list of *Crin.* & *Ech.*; BENNETT (36) p. 271.

(e) **Lower Carboniferous**:—*Crin.* as zonal fossils: BATHER (19).—*Archæocidaris urii*, "not found before below the Upper Grey Limestone," found at base of Lower Brown Limestone at Craig-adwy-wynt, N. Wales; MORTON (245) p. 59.—Central France, *Ech.* with n. spp., *Archæocidaris grüneri*, *Palæchinus lacazei*, *P. rutoti*, *P. robineti*, *P. konincki* and *P. gaudryi* (pp. 125–131), and *Crin.*, *Actinocr.* and *Poteriocr.* (pp. 135–138); JULIEN (151).—Fresh horizon for palechinoids in Belgium; LOHEST (191).—"Petit-granit," Modave, Belgium, *Crin.*; DORLODOT (71) p. 252.—Stage V a, Pair, Belgium, *Platycrinus minsterianus*, *P. cf. planus*; DESTINEZ (66).—Culm and Carboniferous Limestone, *Archæocidaris*; LEYH (188) p. 540.—"Schieferigen Kohlenkalk facies," Ober-Elsass, chiefly Hunsrückwald, *Ech.*, character of the fauna discussed (p. 787), incl. *Palæchinus lacazei*, *Rhoechinus elegans*, *Archæocidaris urii*, and n. spp., *Pholidocidaris tenuis* and *Leptechinus gracilis*; other Carboniferous *Ech.* also discussed; TORNQUIST (327).

Geological history of N. American spp. of *Agaricocrinus*; MILLER & GURLEY (235) p. 9.—Louisiana Limestone to Upper Burlington, table showing range of *Crin.* and *Blast*: KEYES & ROWLEY (156) p. 30–33.—Bridger Mts., Bozeman, Montana, n. spp. of *Poteriocr.* and *Platycr.* (vide IV F) MILLER & GURLEY (234).—Ditto, *Batocr.*, *Rhodocr.*, *Platycr.*, *Dichocr.*; MILLER & GURLEY (235).

Kaskaskia,—Pulaski Co., Ky., *Poteriocr.*, *Zeacr.*; Dover Hill, Ind., *Zeacr.*; MILLER & GURLEY (232).—Monroe Co., Ill., *Poteriocr.*; Randolph Co., Ill., *Agassizocr.*; MILLER & GURLEY (233).—Breckenridge Co., Ky., *Talarocr.*, MILLER & GURLEY (235).

St. Louis,—Lanesville, Ind., *Batocrinus*; Spargen Hill, Ind., *Steganocr.*, *Barycr.*; MILLER & GURLEY (232)—Alton, Ill., *Poteriocr.*; MILLER & GURLEY (233).

Warsaw,—Jersey Co., Ill., *Forbesocr.*; MILLER & GURLEY (232).—Salem, Ind., *Batocr.*; MILLER & GURLEY (233).

Keokuk,—Washington Co., Ind., *Forbesocr.*, Crawfordsville, Ind., *Taxocr.*; MILLER & GURLEY (232).—Boonville, Mo., *Batocr.*, *Poteriocr.*; Jersey Co., Ill., *Forbesocr.*; Edwardsville, Ind., *Forbesocr.*; Keokuk, Ia., *Batocr.*; Crawfordsville, Ind., *Barycr.*; Chert Hill, Ala., *Dorycr.*; Little Barren R., Ky., *Batocr.*; MILLER & GURLEY (234).—Keokuk, Ia., *Agaricocr.*; MILLER & GURLEY (235).

Burlington,—Adams Co., Ill., *Batocr.*, *Agaricocr.*, *Symbathocr.*, *Platycr.* (232); *Batocr.*, *Agaricocr.* (233); *Batocr.* (234): Burlington, Ia., *Strotocr.* (232); *Batocr.* (233); *Actinocr.*, *Dorycr.*, *Batocr.*, *Cyathocr.* (234): Sagetown, Ill., *Batocr.* (234): near Sharon, Mo., *Batocr.*, *Dorycr.*, *Steganocr.*, *Platycr.* (235): Sedalia, Mo., *Batocr.*, *Amphoracr.*, *Actinocr.* (232); *Batocr.*, *Actinocr.* (233); *Actinocr.*, *Physetocr.*, *Dorycr.*, *Batocr.*, *Barycr.*, *Codaster* (234); MILLER & GURLEY.

Kinderhook,—Le Grand, Iowa, List of *Crin.* and *Blast.*, mode of occurrence; BEYER (39) pp. 223–225: *Scaphiocr.*; MILLER & GURLEY (233).—Louisiana, Mo., horizons of *Crin.* and *Blast.*; KEYES (155) pp. 363 & 366.

Chouteau Limest.,—Sedalia, Mo., *Amphoracr.*, *Rhodocr.* (233); *Amphoracr.* (234); *Actinocr.* (235); MILLER & GURLEY.

(f) **Devonian**:—General distribution Echinoderms; FRECH (89) p. 120.

Middle,—“Pilton, Croyde and Braunton Beds,” Devonshire, list of *Ech.*, *Act.*, *Oph.*, *Crin.*, including 14 insufficiently described n. spp.; WEID-BORNE (342) pp. 376 & 377.—Haina near Waldgirm, *Crin.*, *Ech.*; BEYER (38) p. 88.—“Lenneschiefer” Crinoid-bed, near Attendorn, Westphalia, *Crin.*; HUNDT (135) p. 219.—(? Lower or Middle) Sta. Lucia, Spain,

*Megistocr. waliszewskii*, *Stortingocr. haugi*, n. spp., *Cupressocr.*, *Codiocr. granulatus*, *Pentremisidea*; OEHLERT (250) p. 818 et sqq.

Lower,—Oakhampton and Treborough, Devon, Crinoid columnals; HICKS (130) p. 456.—"Riffkalk," E. Alps, *Eucalyptocr.*, *Rhipidocr.*, *Hexacr.*, *Cupressocr.*, *Coccocr.* (p. 177); *Ctenocr. typus* probably does not occur in the Upper Coblenzian; "Asterscheid" should be "Asterstein" (p. 179); FRECH (88).

Upper,—Portage and Ithaca groups, spp. of *Taxocrinus*, *Poteriocrinus*, and *Arthroacantha*; KINDLE (161).

Lower,—Hamilton group, Charleston, Ind., *Megistocr.*, *Stereocr.* (235); *Dolatocr.* (232, 233, 235); MILLER & GURLEY.—Rio Mæcurú, Amazonas, *Ctenocrinus* (?) columnals; KATZER (152) p. 209.

(g) **Silurian**:—General distribution Echinoderms; FRECH (89) p. 64.—L. Temiscaming outlier, Ottawa, *Crin.*; AMI (4) p. 158.

Niagara,—Decatur Co., Tenn., *Thysanocr.* (232); *Caryocr.* (233); *Glyptaster*, *Eucalyptocr.* (234); Louisville, Ky., *Lecanocr.* (232); MILLER & GURLEY.—Jones Co., Iowa, *Petalocrinus mirabilis* and *P. major*, n. spp.; WELLER & DAVIDSON (341).—Joliet, Illinois, n. spp. of *Cryptodiscus* (q.v. sub. IV F); WELLER (339); others from Racine, Wis.; WELLER (340).

"Middle Trilobite bed" (=Yass beds of David), at Bowning Village, Co. Hardne, N. S. W., *Palæchinus*; MITCHELL (236).—Melbourne, *Hapalocrinus victoriae*, n. s.; BATHER (30) p. 337.

(h) **Ordovician**:—General distribution Echinoderms; FRECH (89) p. 63.

"Keisley Limestone," Upper Bala, *Sphaeronis pyriformis*, and various crinoid stems; REED (276) pp. 82, 93.—"Middleton group," Mincop, W. Shropshire, *Meroocrinus salopice*, n. s., and another crinoid; BATHER (20).—Portraine, Co. Dublin, *Glyptocystis cf. Logani*; GARDINER, REYNOLDS & REED (95) pp. 524, 538.

Calceferous,—Phillipsburgh, Quebec, *Palæocystis* (p. 115); Chazy, Quebec, —St. Dominique, *Bolboporites* (p. 117); Abbotsford, *Bolboporites*, *Blastoidocr.* (p. 118); Grande Ligne, *Blastoidocr.*, *Palæocystis* (p. 118); Id. of Montreal, *Malocystis*, *Palæocystis*, *Blastoidocr.*, *Glyptocystis*, *Bolboporites* (pp. 119, 121 & 122); Joliette, *Palæocystis* (p. 120); Caughnawaga, *Blastoidocr.*, *Bolboporites*, *Glyptocystis* (pp. 122 & 123); AMI (5).

Trenton,—various localities in Quebec, *Crin.*, *Cyst.*, compiled list (p. 144), Joliette, *Glyptocrinus* (p. 147); AMI (5).—Of Ottawa Valley, list of *Crin.*, *Cyst.*, *Ast.*; AMI (4) p. 154.—Ottawa, *Astrocystis ottawaensis*, n. g. et sp.; WHITEAVES (345).—Galena-Trenton and Black R., —L. Winnipeg, *Crin.*, *Cyst.*, *Ast.* fragments; WHITEAVES (344) p. 159.

Cincinnati group,—spp. of *Reteocr.*, *Canistocr.* [sic], *Xenocr.*, *Ptychoocr.*, *Glyptocr.*, and *Mariacr.*, second-hand descriptions; JAMES (146).

Larapintine series,—Middle Valley, Central Australia, Crinoid stems, one figured [with 5 longitudinal sutures and most peculiar articular surface]; TATE (323) p. 113.

(k) **Cambrian**:—Tejřovic and Skrej, Bohemia, *Cyst.* and *Edrioast.*, incl. *Stromatocystis*, n. g.; POMPECKJ (268) p. 502–508.—Ditto, localities for *Mitrocystis*, *Lichenoides priscus*, *Stromatocystis*, and *Trochocystis bohemicus*, q.v. in IV G; JAHN (145).—Tremadoc fossils, new locality at Hof, Bavaria, *Macrocytella bavaria*; POMPECKJ (269).



## IV. SYSTEMATIC.†

## (A).—ECHINODERMA IN GENERAL.

Systematic Synopsis; BELZUNG (35) pp. 503 & 504.

Classification into Holothurides, Echinides, Stellérides, Crinoides, and Radiolaires, the last being associated by reason of their ground-plan, no distinction recognized between Protozoa and Metazoa; VILLOT (334, 1 April, 1891).

Divided into *Pelmatozoa*, *Asterozoa*, and *Echinozoa*, the last incl. *Hol.*; ZITTEL (356) p. 113.

Classification of Echinoderma, its principles (p. 368); HAECKEL (116). System of *Echinoderma*; HAECKEL (118) p. 164: thus expressed by HAECKEL (116) p. 378:

Cladomes	Classes	Sub-classes
I	Amphoridea	Amphoralia
Monorhonia (Noncincta)	Thuroidea	Amphoronia
		Paractinota
	Cystoidea	Actinopoda
II	Blastoidea	Microplacta
		Megaplacta
	Crinoidea	Eublastoidea
Pentorhonia orocincta		Parblastoidea
III	Echinidea	Palacrinida
	Ophiodea	Neocrinida
		Palechinida
Pentorhonia pygocincta	Asteridea	Antechinida
		Palophiura
		Colophiura
		Palasterida
		Colasterida

*Anolena*, a physiological grouping of armless classes, *Cyst.*, *Blast.*, *Hol.*, *Ech.*; HAECKEL (116) p. 373.

*Monorhonia*, sub-phylum nov., includes *Holothuriodea*, = *Anactinogonidiata* Bell; HAECKEL (116) p. 371 & (117) p. 403.

*Olenata*, a physiological grouping of armbearing classes, *Crin.*, *Ast.*, *Oph.*; HAECKEL (116) p. 373.

*Orocincta*, super-class nov., includes *Blast.* and *Crin.*; HAECKEL (116) p. 372 & (117) p. 403.

*Pentorhonia*, sub-phylum nov. = *Actinogonidiata*, Bell; HAECKEL (116) p. 372 & (117) p. 403.

*Pygocincta*, super-class nov., includes *Ech.*, *Ast.* and *Oph.*; HAECKEL (116) p. 373 & (117) p. 403.

## (B).—HOLOTHURIOIDEA.

List of Japanese species; MITSUKURI (237).

Relations of *Hol.* to *Cystidea*; HAECKEL (118) p. 8.

† A dagger prefixed to the trivial name of a species indicates that it is fossil; prefixed to the name of the author, it denotes that the reference is to the species in a fossil state; prefixed to the name of a genus, it indicates that all species of the genus here recorded are fossil, and the † is therefore not repeated before each name. The abbreviations *l. c.* and *op. cit.* refer only to the place or work quoted immediately before. *Ibid.* is used when the locality and horizon are the same as those of the preceding item.

A name and reference quoted without further statement (e.g. "*Antyroderna danielseni*; HÉROUARD," on p. 59) indicate that the quoted author's statement refers merely to locality or some question of slight importance. Further information can usually be gleaned from the cross-references to II and III, given under TITLES.

*Holothuroidea*, sub nomine *Thuroidea*, defined and discussed; HÆCKEL (116) p. 429.

Classification of Holothurians thus given by HÆCKEL (116) p. 442:

		Orders	Families
I			
Paractinota		Archithuriæ	Protholothurida
(Paractinopoda)		Synaptonia	Palæothurida
		Nectothuriæ	Synaptida
			Trochodotida
			Pelagothurida
			Cucumarida
II		Dendrothuriæ	Psolida
Actinopoda		Molpadonia	Rhopalodina
(Actinota)			Molpadida
			Caudinida
			Psychropotida
		Elasipoda	Deimatida
		Aspidothuriæ	Elpidida
		Aspidochirota	Stichopoda
			Sporadipoda

*Actinopoda*, sub-class defined; HÆCKEL (116) p. 440.

*Ankyroderma*,—anchors and anchor-plates; ØSTERGREN (255) p. 156, fig.—*A. danielsseni*; HÉROUARD (126), p. 165: B. of Biscay, notes on spicules; KOEHLER (163) p. 492: Spicules, redescri.; KOEHLER (164) p. 118.—*A. jeffreysii*, no muscular tubules in integument; GÉROULD (100) p. 133.

†*Archithuriæ*, hypothetical ancestral group, defined; HÆCKEL (116) p. 439.

*Aspidochirota*, order defined; HÆCKEL (116) p. 443.

*Bathyplores*, n. g., with type *Bathyplores natans* (olim *Stichopus*) Sars, redescri., spicules figd., anatomical notes (p. 351); genus includes also *Stichopus moseleyi*, and *S. pourtalesii* Theel (p. 355), and *S. tizardi* Theel, redescri., respiratory trees, calcareous ring, and spicules figd.; ØSTERGREN (253) Festschrift für Lilljeborg, p. 354.

*B. fallax*, Bergen, respiratory trees figured; ØSTERGREN (253) *op. cit.*, p. 355, n. sp.

*Benthodytes janthina*; HÉROUARD (126) p. 164.

*B. glutinosa* and *B. lingua*, N. Atlantic, precise localities, depths, and figg. not given; PERRIER (265) C.R. Ac. Paris, cxxiii, p. 902, n. spp.

*Benthogone*, n. g., with genotype *B. rosea*, n. sp., 1300 m., 50° 22' W., 44° 2' N., B. of Biscay, allied to *Lætmogone*; KOEHLER (163) Rev. biol. Nord France, vii, p. 488, & (164) Ann. Univ. Lyon, xxvi, p. 113, figg. 2, 3, 36, 37.—*B. rosea*, nn. var. *cylindrica* et *quattuorlineata*, N. Atlantic; PERRIER (265) p. 900.

*Caudina arenata* et var. *armata*, detailed account of anatomy and histology, with bibliography; GÉROULD (100).—*C. coriacea*, redescribed with internal anatomy; DENDY (63) p. 29.

*Chiridota contorta*, brood-pouch; LUDWIG (204).—*C. dunedinensis*, spicules, pharyngeal skeleton, and internal anatomy, described and figd., distinguished from *C. australiana* (p. 26), and spicule-growth (p. 49); DENDY (63).—*C. levis*, 20 cm. long, Egedesminde, N. Greenland; BERGENDAL (37) p. 11.—*C. pisanii*, with parasitic Gastropod; LUDWIG (206).—*C. rufescens*; LAMPERT (181) p. 67.

*C. stuhlmanni*, Tumbatu, E. coast Africa, allied to *C. rigida*, ciliated funnels dimorphic; LAMPERT (181) Mt. Mus. Hamburg, xiii, p. 67, n. sp.

*Colochirus alba* Hutton sp., redescri. and figd., with internal anatomy; DENDY (63) p. 35.—*C. anceps*, Roebuck B., W. Australia, photograph

- of a living group; SAVILLE-KENT (290) p. 218.—*C. brevidentis* Hutton sp., redescri., and spicules figd; DENDY (63) p. 40.
- C. calcarea* on sea-weed in Cook Strait, N. Z. (p. 38), *C. ocnoidea*, New Brighton, N. Z., with description of internal anatomy (p. 36); DENDY (63) J. Linn. Soc. xxvi, n. spp.
- Cucumaria*; HARRINGTON & GRIFFIN (124).—*C. crucifera*, brown spicules of Semper rediscovered in one specimen, not in the other; LAMPERT (181) p. 60.—†*C. dubiosa*; BELL (33) p. 12.—*C. frondosa*, embryonic stages as plankton, off N. Greenland; BERGENDAL (37) p. 8: walls of stomach (pp. 148, 150, 152), muscles of circumoral water-ring (p. 158), gonads (pp. 171, 175), genital duct (p. 180); GEROULD (100): vide *Pentacta*.—*C. pentactes*; MARCHISIO (216), p. 4.—*C. planci*, autotomy; MONTICELLI (242).—*C. ? thomsoni* and *C. ? turbinata*; DENDY (63) p. 34.
- C. huttoni*, Oamaru, N. Z., with description of internal anatomy; DENDY (63) J. Linn. Soc. xxvi, p. 32, n. sp.
- Cucumariidæ*, relations to *Molpadidæ*; GEROULD (100) p. 180.
- Cuvieria fabricii*; HONEYMAN (131), p. 258.
- Dendrochirota*, order defined; HÆCKEL (116) p. 441.—Number and arrangement of tentacles too variable to be a good classificatory character; LAMPERT (181) p. 63.
- Echinocucumis alba* Hutton, referred to *Colochirus*; DENDY (63) p. 35.—*E. typica*, variation from type in form of spicules; KOEHLER (163) p. 493: var. nov. *abyssalis*, 650 m., 4° 25' W., 44° 36' N., B. of Biscay; KOEHLER (164) Ann. Univ. Lyon, xxvi, p. 119.
- Elasipoda*, order defined; HÆCKEL (116) p. 441.
- Eucyclus* maintained; LAMPERT (181) p. 63.
- Euphronides auriculata* (p. 901), *E. talismani* and *E. violacea* (p. 902), N. Atlantic, precise localities, depths, and figg. not given; FERRIER (265) C.R. Ac. Paris, cxxiii, n. spp.
- Halithuria*, n. g. = "*Holothuria* sensu strictissimo!! = *Sporodipus* = *Trepang*"; HÆCKEL (116) p. 443.
- Holothuria albiventer*, has penetrated from Red Sea to Suez, is distinct from *H. aculeata*, *H. bowensis*, and *H. modesta*, *pace* Hérouard; LAMPERT (181) p. 55.—*H. argus*; WHITELEGGE (346) p. 161.—*H. armata* Selenka is a stage or var. of *Stichopus japonicus*; MITSUKURI (238).—*H. aspera*, vide *Mesothuria*.—*H. atra*; WHITELEGGE (346) p. 161: ? var. *amboinensis*; LAMPERT (181) p. 56.—*H. cinerascens*, anatomical notes; LAMPERT (181) p. 55.—*H. ecalcareo* Sars; ÖSTERGREN (253) p. 356: referred to *Stichopus*, perhaps = *S. tremulus*; ÖSTERGREN (254) p. 9.—*H. erinaceus*, maintained, spicules figd; LAMPERT (181) p. 57.—*H. forskali*, including *H. nigra*, is distinct from *H. poli* and has Cuvier's organ; KOEHLER (170).—*H. glaberrima*, distinct from *H. lubrica*, *H. erinaceus*, and *H. parva*, spicules figd; LAMPERT (181) p. 57.—*H. imitans*, colour and spicules, Funafuti; WHITELEGGE (346) p. 161.—*H. impatiens*; LAMPERT (181) p. 54.—*H. intestinalis*, includes *H. verrilli*, has variable spicules; KOEHLER (163) p. 482, and (164) p. 106: var. *verrilli*; HÉROUARD (126) p. 163.—*H. lactea*, redescri., from B. of Biscay, includes *H. thomsoni* and possibly *H. murrayi*; KOEHLER (163) p. 478, and (164) p. 102: vide *Mesothuria*.—*H. lubrica*, maintained, spicules figured; LAMPERT (181) p. 58.—*H. maculata*; LAMPERT (181) p. 54.—*H. mammata*; MARCHISIO (216) p. 4.—*H. monacaria*; LAMPERT (181) p. 54.—*H. murrayi*, vide *Mesothuria*.—*H. nigra*, is synonym of *H. forskali* and has Cuvier's organ; KOEHLER (170) p. 507.—*H. pardalis*; WHITELEGGE (346) p. 161: including *H. insignis*, *H. lineata*, and *H. peregrina* Ludwig, but not *H. pardalis*? juv. of Semper, 1868, pl. xxx, fig. 30; LAMPERT (181) p. 52.—*H. parva*, anatomical notes, distinct from *H. glaberrima*,

- spicules figured; LAMPERT (181) p. 56.—*H. pervicax*, colour; LAMPERT (181) p. 53.—*H. polii*; HÉROUARD (126) p. 164; MARCHISIO (216) p. 4: origin of gonads; RUSSO (284): (= *H. nigra*) Cuvierian organs; BARTHELS (18): is distinct from *H. forskali*, does not occur on Atlantic seaboard, and has no Cuvier's organ; KOEHLER (170).—*H. roboni*; DENDY (63) p. 48.—*H. sanctori*; MARCHISIO (216) p. 4.—*H. scabra* (p. 54); *H. signata*, perhaps = *H. edulis* Lesson, has same spicules (p. 53); LAMPERT (181).—*H. stellati*; HÉROUARD (126) p. 163.—*H. thomsoni*, vide *Mesothuria*.—*H. tremula*; KOEHLER (163) p. 483, and (164) p. 108: in only 10 fms; APPELLÖF (13) p. 6: referred to *Stichopus*; ÖSTERGREN (254) p. 7.—*H. tubulosa*; HÉROUARD (126) p. 164; IWANZOFF (138): has no Cuvier's organ; KOEHLER (170) p. 509.—*H. vagabunda*; WHITELEGGE (346) p. 161.—*H. verrilli*, referred to *Mesothuria* and compared with *M. intestinalis*; ÖSTERGREN (253).
- H. roulei*, 1300 m., Bay of Biscay, 5° 22' W., 44° 2' N., allied to *H. intestinalis*, has variable spicules; KOEHLER (163) Rev. biol. Nord France, vii, p. 480, and (164) p. 105, fig. 47, n. sp. Vide *Mesothuria*.
- Ilyodemon ijimai*, Sagami Bay and outer part of Tokyo Bay, over 250 fathoms; MITSUKURI (239) Annot. zool. Japon. i, p. 133, n. sp.
- Lætmogone violacea*; PERRIER (265) p. 900.—*L. wyville-thomsoni*, colour and shape in living state; KOEHLER (164) p. 117: Bay of Biscay, slight variations from Theel's description; KOEHLER (163) p. 492.
- Mesothuria*, rediagnosed, and to it are referred following species—*aspera* (?), *intestinalis*, *lactea*, *magellani*, *multipes*, *murrayi*, *roulei* (?), *thomsoni*, *verrilli*; ÖSTERGREN (253) p. 351.—*M. intestinalis* (olim *Holothuria*) Ascan., redescribed, with figures of spicules, anatomical notes; ÖSTERGREN (253) p. 347.
- Molpadiidae*, relations to *Cucumariidae*; GÉROULD (100) p. 180.
- Molpadonia*, order defined; HÆCKEL (116) p. 441.
- Mülleria echinites*; LAMPERT (181) p. 59; WHITELEGGE (346) p. 160.—*M. mauritiana*, colour; LAMPERT (181) p. 59.
- Nectothurix*, order founded for *Pelagothuria*; HÆCKEL (116) p. 440.
- Oneirophanta mutabilis*; PERRIER (265) p. 900.
- Orcula cucumiformis*, additions to previous description; LAMPERT (181) p. 61.
- Paractinota*, sub-class defined; HÆCKEL (116) p. 438.
- Pentagone*, restricted; PERRIER (265) p. 901.—*P. asorica*; HÉROUARD (126) p. 164; PERRIER (265) p. 901.
- P. porcellus*, N. Atlantic, precise locality and depth not given and no figures; PERRIER (265) C.R. Ac. Paris, cxxiii, p. 901, n. sp.
- Pentacta frondosa*; HONEYMAN (131) p. 258. Vide *Cucumaria*.
- Periamna*, n. g., including *Pentagone naresi* (genotype), *Scotoplania insignis*, *S. robusta*, and a n. sp. *Periamna roseum*, N. Atlantic, precise locality and depth not given and no figures; PERRIER (265) C.R. Ac. Paris, cxxiii, p. 901.
- Pseudocucumis africana*, with young form, incl. *P. theeli* Ludwig, discussed; LAMPERT (181) p. 61.
- Pseudostichopus villosus*, HÉROUARD (126) p. 164.
- Psolus antarcticus*, care of brood; LUDWIG (205).—*P. (Cuvieria) fabricii*; VANHOEFFEN (333) p. 242.—*P. phantapus*; loc. cit.; HONEYMAN (131) p. 257; +BELL (33) p. 12.
- P. macquariensis*, Macquarie Is., N. Z.; DENDY (63) J. Linn. Soc. xxvi, p. 41.—*P. tessellatus*, 1700 metres, 6° 15' W., 45° 47' N.; KOEHLER (164) Ann. Univ. Lyon, xxvi, p. 119: n. spp.
- Psychropotes buglossa*, and *P. fucata*, N. Atlantic, precise localities and depths and figures not given; PERRIER (265), C.R. Ac. Paris, cxxiii, p. 902.—*P. grimaldii*, 4020 m., E. of São Miguel, 38° 9' N., 11° 36' W. (Paris), spicules figd; HÉROUARD (126) pp. 164, 167: n. spp.

- Scotoplana*, restricted; PERRIER (265) p. 901.
- S. delagei*, 1165–1385 metres, near Azores, spicules figured; HÉROUARD (126) pp. 164, 167, n. sp.
- Sigmiodota*, n. g. for spp. of *Chiridota* with sigmoid spicules; ØSTERGREN (255), Bergens Mus. Aarbog, 1896, No. 12, p. 154, footnote.
- Sphærothuria bitentaculata*, found off Japan; MITSUKURI (240).
- Stichopus ecalcareus* (olim *Holothuria*) Sars, perhaps = *S. tremulus*; ØSTERGREN (254) p. 9.—*S. japonicus*, change in spicules with advancing age, includes *Holothuria armata* as var., also var. nov. *australis*; MITSUKURI (238).—*S. mollis* Hutton sp., redescri. and figd, with internal anatomy and spicules, includes *S. sordidus*, Théel; DENDY (63): first recorded from N. S. Wales, colour, external anatomy; WHITELEGGE (347).—*S. regalis*; IWANZOFF (138); KOEHLER (163) p. 488, & (164) p. 113.—*S. tizardi*, redescri. with figures, from B. of Biscay; KOEHLER (163) p. 484, & (164) p. 108, figg. 33–35.—*S. torvus* Théel, probably a *Meseres*; ØSTERGREN (253) p. 357.—*S. tremulus* (olim *Holothuria*) Gunn., redescri., internal anatomy causes change of genus, figures of spicules; ØSTERGREN (254) p. 7.—*S. variegatus*; LAMPERT (181) p. 59.
- S. griegi*, 80–100 fms., W. of Utvær in S.W. Norway, with anatomical notes and figures of spicules; ØSTERGREN (254), Bergens Mus. Aarbog, 1896, No. 12, p. 4.—*S. pallens*, 1300 m., 5° 22' W., 44° 2' N., B. of Biscay, has no spicules; KOEHLER (164), Ann. Univ. Lyon, xxvi, p. 111, figg. 1 & 45; & (163), Rev. biol. Nord France, vii, p. 486: probably a *Meseres*; ØSTERGREN (253) p. 357.—*S. richardi*, 351 m., B. of Biscay, spicules figd; HÉROUARD (126) pp. 164 & 165: n. spp.
- Synallactes*, discussed; ØSTERGREN (253) p. 356.—*S. lactea*; HÉROUARD (126) p. 164.
- S. theeli*, based on specimens not named by Théel, "Challenger Rep. Holothurioides," ii, p. 242; ØSTERGREN (253), Festschrift für Lilljeborg, p. 356, n. sp.
- Synallactinae*, removed from *Holothuriidae* to *Elpidiidae*; ØSTERGREN (253) p. 357.
- Synapta beselii*; LAMPERT (181) p. 64.—*S. digitata*; HÉROUARD (126) p. 165; KOEHLER (163) p. 494, & (164) p. 121.—*S. girardi*, structure of genital tubules; GÉROULD (100) p. 172.—*S. inaequalis*, holotype destroyed; DENDY (63) p. 26.—*S. lappa*, anchors and anchor-plates; ØSTERGREN (255) p. 150, fig.—*S. ooplax*, spicules described, anatomical notes; LAMPERT (181) p. 66.—*S. picta*, Théel, probably syn. of *S. vivipara*; CLARK (53) p. 282.—*S. serpentina*, colour, anatomical notes, number of tentacles; LAMPERT (181) p. 64.—*S. uncinata*, holotype redescri. with internal anatomy; DENDY (63) p. 25.—*S. vivipara*, general description, spicules figd, development, habitat, food; CLARK (53).
- Synaptidae*, distinctive characters; GÉROULD (100) p. 181.
- Synaptonia*, order defined; HÆCKEL (116) p. 439.
- Synaptula*, syn. of *Synapta*; CLARK (53) p. 282.
- Thyone brevidentis* Hutton, referred to *Colochirus*; DENDY (63) p. 40.—*T. briareus*, structure of genital tubules; GÉROULD (100) pp. 171 & 172.—*T. inermis*; HÉROUARD (126) p. 165.
- Thyonidium longidentis* Hutton sp., redescri. and figd, includes *T. caudatum* Hutton, and *T. rugosum* Théel; DENDY (63).
- Trochostoma*, anchors and anchor-plates; ØSTERGREN (255) p. 158, fig.—*T. antarcticum*, no muscular tubules in integument; GÉROULD (100) p. 133.—*T. (Molpadia) oolitica*; HONEYMAN (131) p. 258.
- Tutela*, n. g. with genotype *T. echinata*, N. Atlantic, precise locality and depth not given, and no fig; PERRIER (265), C.R. Ac. Paris, cxlii, p. 901, n. sp.



- stiens, *Neopneustes*, *Homolampas*, *Aceste*, *Palaeobrius*, *Genicopatagus*; Palaeotropiens, *Cleistechinus*, *Palaeotropus*, *Argopatagus*; LAMBERT (178) p. 324.
- +*Agassizia equipetala*, probably not British; BELL (33) p. 10.
- Amphidetus cordatus*; ROBERTSON (280): vide sub *Echinocardium*.
- Amphiope bioculata* and *A. perspicillata*, compared in terms of variations noted in *Monophora darwini*; LAHILLE (176) p. 439.—+*A. palpebrata*, redescribed, from Portugal, compared with *A. lovisatoi* and *A. viliei*; LORIOU (193) p. 14, pls. iii & iv.
- +*Ananchytes*:—*A. artatus* (pp. 159, 161), *A. cf. beaumonti* (p. 162), *A. carinatus* (p. 164), *A. conoideus* (p. 160); FOURNIER (85).—*A. crassissima* Ag. is syn. of *A. conoideus* Goldf.; LAMBERT (180) p. 185.—*A. cf. douvillei* (pp. 161, 163), *A. gibbus* (p. 164), *A. ovatus* (pp. 159, 160, 162, 163, 164); FOURNIER (85): from Turonian [!]; LEONHARD (187) p. 40.—*A. semiglobus* Lam. is syn. of *Galeola papillosa* Klein; LAMBERT (180) p. 184.—*A. cf. semiglobus*; FOURNIER (85) pp. 162 & 163.—*A. spatangiiformis* F. A. Roem., holotype lost; SCHLUETER (297) p. 23.—*Ananchytes striatus*; FOURNIER (85) p. 164.
- Arbacia dufrœnii*; MEISSNER (228) p. 83.—*A. pustulosa*; MARCHISIO (216) p. 4: asphyxia; UEXKÜLL (331) p. 469.—*A. spatuligera*; MEISSNER (228) p. 84.
- +*Arbacia mutellaensis*, Miocene, between Mutella and Cailhas, Portugal; LORIOU (193), Mem. Direc. Trav. Geol. Portugal, p. 8, pl. i, n. sp.
- +*Archæocidaridae*, defined, includes *Archæocidaris*, *Lepidocidaris*; JACKSON (139) p. 241: incl. *Pholidocidaris*, *Lepidocidaris*, *Archæocidaris*, *Eocidaris*; TORNUST (327) pp. 731, 764.
- +*Archæocidaris*, rediagnosed, divided in 2 groups of *A. rossica* and *A. urei*; TORNUST (327) p. 770.—*A. agassizi*, discussed (p. 213); *A. drydenensis*, discussed (p. 214); JACKSON (189): referred to *Eocidaris*; TORNUST (327) pp. 770, 773.—*A. edgarensis*, *A. illinoisensis*, *A. keokuk*, *A. legrandensis*, and *A. mucronata*; JACKSON (139) p. 214.—*A. cf. munsterianus* (pp. 541, 555); *A. nereis* (pp. 540, 555); LEYH (188): redescri. from Domaine des Roches, La Varville, and Siguret; JULIEN (151) p. 126, pl. vi.—*A. rossica* Vern., redescri. with morphological notes (see II B) and figures; TORNUST (326): var. nov. *schellwienii*, Upper Carboniferous, Pontafel, Carnatic Alps; TORNUST (327) p. 781, pl. xxii.—*A. shumardana* and *A. spiniclavata*; JACKSON (139) p. 214.—*A. urei*; MORTON (245) p. 59: redescri.; TORNUST (327) p. 775, pl. xxii: redescri. from l'Ardoisière, Central France, plates figd by Keeping, 1876, not of this genus; JULIEN (151) p. 223, pl. xvi.—*A. wortheni*; TORNUST (326) p. 31 footnote: arrangement of plates fully described, and early growth-stages inferred; JACKSON (139) p. 213, pl. viii.—*A. sp.*, spines from l'Ardoisière (p. 125, pls. xvi & xvii); *A. sp.* ♀, plate and spine from Regny (p. 127, pl. iii); JULIEN (151).
- A. gruneri*, Carboniferous Limestone, l'Ardoisière, Central France; JULIEN (151) p. 125, pl. xvi.—*A. trautscholdi*, based on *A. rossica* Trautsch., 1868, non Verneuil, Carboniferous, Mjatschkowa; TORNUST (326), N. Jahrb. Min. 1896, vol. ii, p. 29, pl. iv.—*A. wervekei*, Lower Carboniferous, Hunsrückwald, Elsass; TORNUST (327), Abh. geol. Karte Elsass, v, p. 778, pls. xxi & xxii: n. spp.
- +*Archæodiadema*, n. g. with genotype *A. thompsoni*, n. s., *Cerithium* beds or Lower *Leda ovum* beds of Upper Lias, Higham Ferrers, Northants, England; GREGORY (106), Geol. Mag. (n. s. Dec. iv), iii, p. 317; LAMBERT in Review says only subgenus of *Diademopsis*.
- +*Asteropsis*, nom. mut. in *Actinopsis*, q. v.; LAMBERT (179).
- Asthenosoma hystrix*; KOEHLER (163) p. 472, & (164) p. 90.
- A. yimai*, near Misaki, Japan (p. 8, pl. ii); *A. longispinum*, 313-376 fms.,

- Sagami Sea, Japan, (p. 5, pl. ii); YOSHIWARA (352), Annot. zool. Japon. i, n. spp.
- Astropyga radiata*; PFEFFER (267) p. 46.
- Atelostomata*, suborder defined, includes families *Cassidulidae*, *Holasteridae*, *Spatangidae*; ZITTEL (356) p. 195.
- +*Bolbaster verrucosus*, Senonian of Mekneça, Algeria; REPELIN (279) p. 104.
- Bothriocidarida*, defined; ZITTEL (356) p. 182; ZITTEL-EASTMAN (357) p. 219.—Place of the Order in the System; JACKSON (139) p. 238.
- +*Bothriocidaris*, possibly a Cystid; KOKEN (171) p. 256.—*B. pahleni*, ambulacrals (p. 190), growth discussed (p. 233); JACKSON (139).
- +*Botriopygus zumoffeni*, slight variations from type; LORIOI (195) p. 161.
- +*Brissopneustes*:—*B. danicus*, Danian of Vixö in Jutland, and other Scandinavian localities (p. 18, pl. i); *B. succicus*, Faxekalk (Danian) of Annetorp, S.W. of Malmö, Sweden (p. 34, pl. i); SCHLUETER (297), Zeitschr. Deutsch. geol. Ges. xlix: n. spp.
- Brissopsis*:—+*B. borsonii*, is Pliocene (Placentian) not Miocene (p. 349); +*B. cf. B. borsonii*, from Placentian of Mt. Capriolo near Bra in Piedmont (p. 351); BOTTO-MICCA (41).—+*B. bucklandi*, holotype redescribed, compared with all other spp. of genus, locality and horizon unknown; SCHLUETER (296) p. 970.—+*B. crescenticus*; MAZZETTI (225) p. 436.—+*B. elegans*, believed to occur in Miocene of Ceva, Piedmont (p. 352); +*B. generi* (p. 345); var. nov. *pliocenica*, Placentian of Monte Capriolo near Bra in Piedmont (p. 346, pl. x); var. nov. *cevensis*, Langhian of Ceva in Piedmont (p. 346); +*B. intermedius* (p. 347); BOTTO-MICCA (41).—*B. lyrifer*; SMITH (314); KOEHLER (163) p. 475, & (164) p. 97; +VINASSA DE REGNY (334) p. 152.—*B. lyriphera* [sic]; +MAZZETTI (225) p. 435.—+*B. ottomangensis*, op. cit. p. 436.—+*B. ovatus* Sismondæ, emended, comes from Helvetian (p. 348, pl. x); +*B. pecchiolii* (p. 347); +*B. sismondæ* (p. 352); +*B. cf. B. sismondæ*, Miocene of Ceva, Piedmont (p. 350); BOTTO-MICCA (41).
- +*B. craverii*, with var. *major* (p. 349, pl. x) & +*B. latissimus* (p. 347), Placentian of Monte Capriolo near Bra in Piedmont; BOTTO-MICCA (41), Boll. Soc. geol. Ital. xv.—+*B. lusitanicus*, Miocene, Grillos near Lisbon, allied to *B. borsoni*; LORIOI (193) Mem. Direc. Trav. Geol. Portugal, p. 42, pl. xiii: n. spp.
- +*Brissus unicolor*; BELL (33) p. 10.—+*B. sp.*; MAZZETTI (225) p. 436.
- +*Caratonus* Agass., 1840, is syn. of *Echinogalerus* Koenig, 1825 (p. 160); *C. avellana* compared with *C. sulcatoradiatus*, and distinguished from *C. dollfusi*, n. s. and *C. peltiformis* (pp. 157 & 158); *C. laubel*, discussed (p. 159); *C. peltiformis*, distinguished from *C. avellana* and *C. dollfusi*, n. s., and discussed, with var. nov. *belgica*, Danian of Ciply (p. 158, pl. iv); *C. sulcatoradiatus*, compared with *C. avellana* (p. 157, pl. v); LAMBERT (180).
- +*C. dollfusi*, Cretaceous, Cotentin, based on *C. avellana* d'Orb. and Desor., non Dubois (p. 158); *C. rutoti*, Danian, "poudingue de la Malogne," Ciply (p. 157, pl. iv); LAMBERT (180) Bull. Soc. Belge Geol., ser. 2, xi: n. spp.
- +*Cardiaster*:—*C. ananchytis*, internal cast from Chlomeker Schichten figd; FRIČ (91) p. 71.—*C. (olim Holaster) cordiformis* Morris non Sorignet is syn. of *C. granulatus* Goldf., for Sorignet's sp. v. *C. heberti*; LAMBERT (180) p. 177.—*C. cotteauanus*; FRIČ (91) p. 72.—*C. fossarius* Benett; JUKES-BROWNE (149) p. 107.—*C. granulatus* Goldf.; STOLLEY (320) p. 247: redescribed, plastron figd, distinguished from Turonian specimens so called which = *C. cotteaudi* d'Orb. (p. 173, pl. iii); *C. heberti*, redescribed, incl. *Holaster cordiformis* Sorignet non Morris, derived from *C. æquituberculatus* (of *M. cor-anguinum* zone) by way of *C. (olim Stegaster) jacki* Stolley (of *Bel. quadrata* zone) (p. 176, pl. ii); LAMBERT (180).—*C. orientalis* Stoliczka, fig. 2 non fig. 1, is probably



- Hemipneustes*; NOETTLING (248) p. 29.—*C. signoanus* d'Orb., is *Ovu-laster*; LAMBERT (178) p. 331.
- +*Cardiolampas* Pomel, its relations to *Collyrites*; GAUTHIER (98) p. 21.
- +*Cassidulus testudinarius*; GREGORIO (105) p. 110.
- +*Catopygus*:—*C. carinatus*; LEONHARD (187) p. 28.—*C. cylindricus*; ALMERA (3) p. 569.—*C. fenestratus*, affinities discussed, apices figured, one abnormal; LAMBERT (180) p. 172.
- Centrostephanus rogersi*, New Zealand; FARQUHAR (83) p. 189.
- Cidaris*:—+*C. attenuata*; RAULIN (274).—+*C. avenionensis*; DEPÉRET (64) p. 522; MAZZETTI (225) p. 417: redescribed from Portugal; LORIOI (193) p. 3, pl. i: Burdigalian and Helvetian; LORIOI (194) p. 118, pl. iv.—+*C. aff. avenionensis*; ALESSANDRI (1) p. 83.—+*C. belgica*; BELL (33) p. 7; MAZZETTI (225) p. 417.—+*C. blumenbachi*; HUG (133) pp. 392, 403; ROMAN (281) p. 329: (Incl. *C. histricoides*, Quenst., geogr. distrib., found in Posen; GALLINEK (93) p. 403.—+*C. buccinifera* Cuffin, referred to *Macrodiadema*; LAMBERT (180) p. 147.—+*C. cervicalis*, HUG (133) p. 403.—+*C. cf. coronata*; FOURNIER (85) pp. 118, 121.—+*C. faujasi*, spines probably belong to *Temnocidaris danica* (p. 145); +*C. forchhammeri*, synonymy discussed; LAMBERT (180) (pp. 143, 190).—+*C. florigemma*; HUG (133) p. 403; SCHLUETER (298) p. 946: Interambulacralis; JACKSON (139) p. 215, pl. viii.—+*C. cf. florigemma*; FOURNIER (85) pp. 118, 121.—+*C. glandifera*; KILIAN (157) pp. 678, 680, 682, 685, 686; ROMAN (281) p. 330.—+*C. cf. glandifera*; FOURNIER (85) p. 120.—+*C. grandæva*; WAGNER (337) p. 100.—+*C. hardouini*; LAMBERT (180) p. 142.—+*C. heteracantha*; KILIAN (157) p. 733.—+*C. hirta* & +*C. melitensis*; MAZZETTI (225) p. 417.—+*C. cf. melitensis* et aff. *C. sabaritensis*; PRATO (271).—+*C. meridanensis*; KILIAN (157) p. 721.—*C. metularia*; PFEFFER (267) p. 45.—+*C. munsteri*, spines redescri., incl. *C. peroni* Cott., Helvetian and Burdigalian; LORIOI (194) p. 119, pl. iv.—+*C. oosteri*, spines discussed; LAMBERT (179) p. 487.—+*C. papillata*; MAZZETTI (225) p. 417.—+*C. parandieri* Ag., made syn. of *C. blumenbachi* Munst.; HUG (133) p. 403.—+*C. peroni* Cott., is distinct from *C. munsteri* Sism.; ALESSANDRI (1) p. 84.—+*C. pilum*; KILIAN (158) p. 894.—*C. psammaea*; SCHLUETER (298) p. 946.—+*C. pseudoserrata* Pavay non Cott., made n. sp. *Cidaris pannoniae*; LAMBERT (179) p. 486.—+*C. punctatissima*, KILIAN (157) pp. 733, 738.—+*C. rosaria*; ALESSANDRI (1) p. 83: spines, redescri.; VINASSA DE REGNY (334) p. 143.—+*C. serrata*; LAMBERT (180) p. 142, pl. ii.—+*C. cf. spinosus*, in Posen; GALLINEK (93) p. 404.—+*C. subularis*, spines found in Eocene of Aude; LAMBERT (179) p. 486, pl. xviii.—+*C. subvesiculosa*; FRIČ (91) p. 71.—+*C. tessurata*; SANGIORGI (288) p. 180.—+*C. tombecki*, redescri.; LAMBERT (180) p. 145, pl. ii.—+*C. transversa*; WAGNER (337) p. 100.—*C. tribuloides*, interambulacralis; JACKSON (139) p. 218, pl. viii.—+*C. verticillum*, "è la specie fossile della vivente *Cidaris verticillata*; Lam. Fu così denominata per distinguerla da essa"; MAZZETTI (225) p. 417.—+*C. vesiculosa*; KILIAN (157) p. 793.—+*C. sp. a, b, c, d*, spines, Callovian; PARONA (257) pp. 394 & 395, and figg. 45-47.—+*C. sp.*, spine like *C. chalmasi*, from S. Tunis; GAUTHIER (98) p. 16.—+*C. sp.* referred by Peron to *C. distincta* Sorignet; LAMBERT (180) p. 143, pl. ii.—+*C. sp.*; ALESSANDRI (1) p. 84, pl. ii.
- +*C. montainvillensis*, Calcaire pisolitique à *Nautilus danicus* de Montainville, also at Meudon and Vigny, in Calcaire grossier of Mons, Upper Chalk of Faxoe, and Chalk of Ciply, based on spines; but subsequently shown to be only a var. of *C. forchhammeri*; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, pp. 143, 190, pl. ii.—+*C. pannoniae*, based on *C. pseudoserrata* Pavay non Cotteau, Budapest; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 486.—+*C. pium*, Bryozoan Crag,

- Aldborough, Suffolk; BELL (133) Rep. Yorksh. Soc. for 1896, p. 7, no fig.—†*C. suleimani*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 11, pl. ii : n. spp.
- †*Circopeltis*, defined, place in system, includes *Micropolina* and *Strictechinus*; *C. baicherei* discussed; LAMBERT (179) p. 517.
- †*Clypeaster*:—*C. acclivis*, redescr. fr. Portugal; LORIOL (193) p. 18, pl. v.—*C. acuminatus*; FRANZENAU (87) p. 20.—*C. altus*, redescr. fr. Portugal; LORIOL (193) p. 24, pl. x.—*C. altus* Leske, *C. depressus* Sow., *C. gibbosus* Serr., *C. latirostris* Ag., *C. michelottii* Ag., *C. olisiponensis* Mich., *C. placenta* Mich., *C. portentosus* Des-Moul., *C. scillai* Des-Moul., *C. tauricus*, Desor., maintained, all other names applied to this group becoming those of subsp. or else synonyms; MAYER-EYMAR (224).—*C. atlas*, Tortonian, Algeria (p. 181); *C. beringeri*, Tortonian, plain of Chellif, Algeria (pp. 175 & 176); REPELIN (279).—*C. cf. breunigii*, described; BONTSCHEFF (40) p. 369.—*C. cinalaphi*, and *C. conoideus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) pp. 175 & 176.—*C. crassicostratus*; ALESSANDRI (1) p. 80: redescr. fr. Portugal, also plaster cast of type figured, synonymy discussed; LORIOL (193) p. 16, pls. iv, v.—*C. curtus*, and *C. decemcostatus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) pp. 175 & 176.—*C. depressus*, vide *C. altus*.—*C. expansus*, *C. aff. expansus et marginatus*, Tortonian, Dra el Khenanis, &c., Algeria; REPELIN (279) pp. 179, 180, 181.—*C. fasciatus*; GREGORIO (105) p. 111.—*C. gibbosus*, vide *C. altus*.—*C. cf. guidotti*, Miocene of Vigoleno; VINASSA DE REGNY (334) p. 154.—*C. intermedius*; ALESSANDRI (1) p. 81, pl. ii: Helvetian of Tiaret, Algeria; REPELIN (279) p. 157.—*C. cf. laboriei*, Tortonian, Dra el Khenanis, Algeria; REPELIN (279) pp. 179 & 180.—*C. laganooides*, redescr. fr. Portugal; LORIOL (193) p. 33, pl. xi.—*C. latirostris*, ditto; *op. cit.* p. 31: vide et. *C. altus*.—*C. marginatus*, redescr. fr. Portugal; LORIOL (193) p. 34, pl. xi.—*C. michelotti*, ditto; *op. cit.* p. 29, pl. x: vide et. *C. altus*.—*C. cf. ogleianus*, Tortonian, Dra el Khenanis, Algeria; REPELIN (279) pp. 179 & 180.—*C. olisiponensis*, redescr. fr. Portugal; LORIOL (193) p. 22, pl. viii: vide et. *C. altus*.—*C. parvituberculatus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) pp. 175 & 176.—*C. placenta* and *C. portentosus*, vide *C. altus*.—*C. productus*, Tortonian of Dir el Kebir, Algeria (p. 172), plain of Chellif (p. 175 & 176); var. *tigaudensis*, Tortonian, Algeria (p. 181); *C. punctulatus*, Tortonian, plain of Chellif, Algeria (pp. 175 & 176); REPELIN (279).—*C. reidi*; FRANZENAU (87) p. 20.—*C. scillae*, vide *C. altus*.—*C. subacutus* (pp. 175 & 176), and *C. subconicus* (pp. 175, 176, 181), Tortonian, plain of Chellif, &c., Algeria; *C. cf. suboblongus*, Tortonian, Dra el Khenanis, Algeria (pp. 179 & 180); REPELIN (279).—*C. tauricus*, redescr. fr. Portugal; LORIOL (193) p. 28: vide et. *C. altus*.
- C. delgadoi*, Miocene, Marvilla, near Lisbon; LORIOL (193) Mem. Direc. Trav. Geol. Portugal, p. 26, pl. ix.—*C. guidottii*, Pliocene, Castellarquato; VINASSA DE REGNY (335) Atti Soc. Toscana, xv, p. 150 and fig.—*C. mutellensis*, Miocene, Mutella, Portugal (p. 21, pl. vii); *C. palencaensis*, Miocene, Forno do Tijolo (Palença) and Portinho d'Arrabida, Portugal (p. 19, pl. vi); LORIOL (193) Mem. Direc. Trav. Geol. Portugal: n. spp.
- †*Clypeolampas*:—*C. helios* (p. 24, pl. v), and *C. vishnu* (p. 25, pl. iv), Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3: n. spp.
- †*Codiopsis doma*, Cenomanian of Devon; JUKES-BROWNE & HILL (150) p. 143.
- †*Collyrites*, the genus discussed; GAUTHIER (98) p. 21.—*C. analis* not Callovian; PARONA & BONARELLI (259) p. 82.—*C. bicordata*; HUG

- (133) p. 392.—*C. carinata*; KILIAN (157) p. 679.—*C. elliptica*; PARONA & BONARELLI (259) p. 81.—*C. friburgensis*, Oxfordian, Tunis; GAUTHIER (98) p. 20, pl. xxxii.—*C. malbosi*; KILIAN (157) p. 678.—*C. oblonga*; ALMERA (3) p. 568.—*C. ovalis* not Callovian (p. 82); *C. pseudoringens* (p. 81); PARONA & BONARELLI (259).—*C. subelongatus* referred to *Disaster*; LAMBERT in KILIAN & LEENHARDT (159) p. 974.
- C.*, Neocomian of Palud-de-Moustiers (Basses-Alpes); LAMBERT in KILIAN & LEENHARDT (159) p. 973, n. sp. sine nom.
- Collyropsis*, a link between *Collyrites* and *Ananchytidae*; GAUTHIER (98) p. 22.
- +*Conoclypeus*:—*C. anacoreta* (p. 442), *C. bordae* (p. 443); MAZZETTI (225).—*C. conoideus*; FOURNIER (85) p. 179; POPOVICI-HATZEG (270) p. 248.—*C. depressus* (p. 443), *C. duboisii* (p. 442), *C. montesiensis* (p. 443), *C. ovum* (p. 443), *C. plagiosomus* (p. 442); MAZZETTI (225).—*C. rostratus*; PRITCHARD (272) p. 143.—*C. semiglobus* (p. 442), *C. subcylindricus* (p. 442); MAZZETTI (225).
- +*Coptosoma*, incl. *Glyptocidaris*, place in system (p. 498); *C. atacicum* should be *C. blanggianum* Desor. (p. 504); *C. crenulare* (olim *Glyptocidaris*), apex figured (p. 510); *C. monzense* discussed (p. 505); *C. pellati* discussed (p. 505); *C. rouselli* closely allied to *C. pentagonale* (p. 505); LAMBERT (179).
- C. granulare*, Eocene, Trabet de Montolieu (Aude) (p. 506, pl. xviii); *C. marticense*, for *Cyphosoma schlumbergeri* Cotteau, from Cretaceous of Martigues (p. 503); LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv: n. spp.
- +*Coraster meunieri*; FOURNIER (85) pp. 161, 163.
- +*Cosmocypheus*, syn. of *Cyphosoma*; LAMBERT (179) p. 499.
- Cyclaster* discussed; SCHLUETER (297) p. 25.—+*C. archeri*, with synonymy; PRITCHARD (272) p. 144.
- +*Cyclolampas voltzi* or *verneuili*, Oxfordian, Tunis, compared with specimens from Ardèche and Var; GAUTHIER (98) p. 19.
- +*Cystocidaroida*, diagnosis of Order; GREGORY (109) p. 133; ZITTEL (356) p. 182; ZITTEL-EASTMAN (357) p. 219.
- +*Cyphosoma*, incl. *Phymosoma* & *Koenigia*; LAMBERT (179) p. 499.—*C. ameliae* is very distinct from *Micropsis* and *Micropsidia*; ARNAUD (14) p. 239.—*C. arnaudi* Cott., referred to *Asteropsis* (p. 497); *C. aublini* referred to *Thylechinus* (p. 503); *C. blanggianum* de Loriol non Desor., referred to *Thylechinus* (p. 503), but Desor sp. referred to *Coptosoma* (p. 504); *C. bonissenti* Cott., referred to *Rachiosoma* (p. 497); LAMBERT (179).—*C. corneti*; LAMBERT (180) p. 154.—*C. croizieri* Cott., referred to *Thylechinus* (p. 497); *C. llora*, Cott., referred to *Actinopsis* (*Heteractis*) (pp. 500, 508); LAMBERT (179).—*C. paucituberculatum*; KILIAN (157) p. 733.—*C. pulchellum* referred to *Thylechinus* (p. 504); *C. rarituberculatum* Cott., referred to *Coptosoma* (p. 497); LAMBERT (179).—*C. schlumbergeri* Cott., Turonian of Algeria, referred to *Thylechinus*, but the one from Martigues is a *Coptosoma*, *C. marticense*, n. sp. (p. 503); LAMBERT (179).—*C. schlumbergeri* and *C. verneuili*, not referable to *Micropsidia*; ARNAUD (14) p. 238.—*C. superbum*, probably a *Thylechinus*; LAMBERT (179) p. 503.—*C. sp.*, Maestrichtian, Mari Hills, Baluchistan; NOETTLING (248) p. 13.
- C. inops*, based on a spine, and *C. rutoti*, both Senonian, phosphatic chalk of Ciply; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 155, pl. iv: n. spp.
- Diadema setosum*; DUERDEN (77) p. 284: colour; PFEFFER (267) p. 45.—+*D. sp.*; BELL (33) p. 7.
- +*D. megastoma*, Middle Crag, probably derived from Diestian, Waldringfield; BELL (33) Rep. Yorksh. Soc. for 1896, p. 7, no fig., n. sp.
- Diademides* (= *Glyphostomata*), scheme of classification; LAMBERT (179) p. 511.

- †*Diplopodia*:—*D. hermonensis*, added details; LORIOL (195) p. 150, pl. vi.  
—*D. (Pseudodiadema) variolare*; PERON (261) p. 298: fr. Lebanon; LORIOL (195) p. 151, pl. vi: var. *roissyi*, redescribed, connected with *D. zumoffeni*; LORIOL (195) p. 152, pl. vi.
- D. blankenhorni*, Cenomanian, Wady Salima, nr. Douar, Valley of the Nahr el Kelb, nr. Beit-Chebab, and Bikfaya (outside the village), Lebanon; LORIOL (195) Rev. Suisse Zool. v, p. 149, pl. vi, n. sp.
- Diploporus*, syn. of *Salmacis*; LAMBERT (179) p. 497.
- †*Disaster*, etymology, non *Dysaster*; LAMBERT in KILIAN & LEENHARDT (159) p. 974.—*D.*, cf. *analis*; FOURNIER (85) p. 115.—*D. anasteroides*; KILIAN (157) pp. 733 & 734.—*D. granulatus*; HUG (133) p. 404.—*D. ovalis* not Callovian; PARONA & BONARELLI (259) p. 82.—*D. subelongatus*; KILIAN (157) pp. 721, 734; KILIAN & LEENHARDT (159) pp. 974, 976.
- †*Discoidea*:—*D. concava*?; FOURNIER (85) p. 117.—*D. conica*; KILIAN (157) p. 797, & (158) p. 894; PARONA & BONARELLI (258) p. 64.—*D. cylindrica*; op. cit. p. 65.—*D. decorata*; ALMERA (3) p. 568.—*D. maxima*; FOURNIER (85) p. 159.—*D. rotula*; KILIAN (158) p. 894.—*D. subuculus*; FOURNIER (85) pp. 134, 141, 157, 159, 161.
- †*Ditremaster* (?) sp.; HAGMANN (119).
- Dorocidaris*:—†*D.* cf. *bartletti*, spine fr. Pliocene of Parma & †*D.* cf. *blakei*, plates and spines fr. Pliocene (Tortonian) of Parma district (p. 146); *D. papillata*, spines, redescribed from Neogene of Parma district, incl. *Cidaris schwabenau* Laube, and probably *C. signata* and *C. margaritifera* Menegh. (p. 144); †VINASSA DE REGNY (334).—*D. papillata*; KOEHLER (163) p. 472, & (164) p. 89: action of Stewart's organs, asphyxiation; UEXKÜLL (331) p. 468.—†*D.* sp.; VINASSA DE REGNY (334) p. 146.
- †*Duncanaster*, n. g., with genotype *D. australis* (olim *Holaster*), Duncan; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 317, footnote.
- Dysaster*, vide *Disaster*.
- †*Echinanthus*:—*E. angulatus*; MAZZETTI (225) p. 437.—*E. aremoricus*, redescribed. fr. Portugal; LORIOL (193) p. 41, pl. xii.—*E. marginatus*; MAZZETTI (225) p. 437.
- E. griesbachi*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 22, pls. iv & v, n. sp.
- Echinarachnius*:—†*E. juliensis*, Des., Patagonian formation, San Julian; IHERING (136) p. 336.—*E. parma*; HONEYMAN (131) p. 256.
- Echinaster sepositus*, var. nov. *mediterraneus*, G. of Rapallo, 1 metre; MARCHISIO (216) p. 2.—*E. spinosus*, off Japan; ANON. (12).
- Echinobrisidae* include *Echinobrisiensis*, *Archiaciens*, *Pygauliens*, *Clypeens*, *Catopygiens* and *Pyguriens*; LAMBERT (180) p. 167.
- †*Echinobrisus*:—*E. bourgeoisi* is a *Nucleopygus*, perhaps = *N. minimus*; LAMBERT (180) p. 170.
- E. ghasirensis*, Cenomanian, below Ghazir, Lebanon; LORIOL (195) Rev. Suisse Zool. v, p. 161, pl. vii, n. sp.
- Echinocardium australe*, local var., Wellington, N.Z.; FARQUHAR (83) p. 187.—*E. cordatum*; ROBERTSON (280); †BELL (33) p. 11: and its Gregarine parasite; LÉGER (185).—*E. flavescens*; KOEHLER (163) p. 475 and (164) p. 97.
- †*Echinoconus*:—*E. castanea*; KILIAN (158) p. 894; PARONA & BONARELLI (258) p. 65.—*E. conicus*; FOURNIER (85) p. 164; STOLLEY (320) p. 272: Lam. (= "*albogalerus*" Strombeck); STOLLEY (319) p. 144.—*E. gigas*, apparently differing from the norm in ambulacral pores, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) p. 17, pl. iii.—*E. roemeri*; STOLLEY (320) p. 272.—*E. subconicus*; FOURNIER (85) p. 164.
- †*Echinocorys*, vide sub *Ananchytes*. Geological history and mutations;

- LAMBERT (180) p. 178.—*E. arnaudi* discussed, incl. *E. regularis* Arnaud nom. nud.; LAMBERT (180) p. 184.—*E. sulcatus*; STOLLEY (320) p. 256.—*E. vulgaris*, var. *conica*; STOLLEY (320) pp. 247, 272: described, distinguished from a var. nov. *subconica*, of Senonian; LAMBERT (180) p. 182: var. *gibba*, Rathsbruche, Luneburg (p. 143), var. *conica*, *rotunda* (p. 147); STOLLEY (319): var. *ovata*; STOLLEY (320) p. 247: defined and described, includes var. *limbata*, its origin, it gives rise to a subvar. *ciptyensis*; LAMBERT (180) p. 181, pl. v.
- E. belgicus*, Danian, Ciply; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 183, pl. iv.—*E. duchesnei*, Cretaceous, ? Senonian, Ambohimarina, near Diégo-Suarez, Madagascar, allied to *E. beaumonti*; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 329.—*E. pyramidalis*, Danian of Bedat, quoted from Arnaud MS.; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 183, pl. iv: n. spp.
- Echinocyamus*:—*E. forbesi*, †*E. hispidulus*, and †*E. oviformis*; BELL (33) p. 10.—†*E. piriformis*; RAULIN (274); ALESSANDRI (1) p. 79, pl. ii.—*E. pusillus*; MARCHISIO (216) p. 4; †BELL (33) p. 9: Pliocene, Mte Mario; †MELI (231) p. 149: incl. *E. transylvanicus*, Laube; †VINASSA DE REGNY (334) p. 149.—†*E. umbonatus*, redescribed, from Upper Burdigalian; LORIOLO (194) p. 116, pl. iv.
- Echinocyphus*, incl. *Zeuglopleurus*, place in system; LAMBERT (179) p. 495.—†*E. difficilis*; SHARMAN & NEWTON (306) p. 254.
- †*Echinocystidae*, diagnosis; GREGORY (109) p. 133.
- †*Echinocystis* Wyv.-Thoms., discussed; JACKSON (139) p. 242.—*E. pomum*, structure fully described, affinities discussed; GREGORY (109) p. 124.
- †*Echinogalerus* Koenig, with type *E. peltiformis* Wahlenb., is prior to *Caratomus* d'Orb.; LAMBERT (180) p. 160.
- †*Echinolampas*:—*E. affinis*; ALESSANDRI (1) p. 78; MAZZETTI (225) p. 438.—*E. algerius*; BRIVE (45) p. 597.—*E. angulatus*; ALESSANDRI (1) p. 77, pl. ii; MAZZETTI (225) p. 438.—*E. beaumonti* and *E. blainvilliei*; MAZZETTI (225) p. 441.—*E. calarensis*; ALESSANDRI (1) p. 76.—*E. dinanensis* var. nov. *gahardensis*, Miocene, Brittany; SEUNES (305).—*E. conicus* (p. 440), *E. depressus* (p. 437), *E. discus*? (p. 440), *E. ellipticus* (p. 439), *E. escheri*? (p. 438), *E. eurysonus* (p. 438), *E. globulus* (p. 438), *E. hemipilus* (p. 441); MAZZETTI (225).—†*E. hemisphaericus*; ALESSANDRI (1) p. 74; MAZZETTI (225) p. 440; VINASSA DE REGNY (334) p. 152: including *E. linki* Goldf., and *E. semiglobus* Grasel.; MELI (230) p. 164: redescribed, including *E. linki*, Goldf. (p. 37, pl. xi), with var. nov. *maxima*, Miocene, numerous localities, Portugal (p. 40, pl. xii); LORIOLO (193).—*E. insignis*, Tortonian, plain of Chellif, Algeria; REPELIN (279) p. 175.—*E. kleini* (p. 439); *E. magnificus* Mazz., 1888, Miocene, Montese [possibly intended as n. sp.] (p. 441); *E. patellaris* (p. 440); MAZZETTI (225).—*E. pilus*; ALESSANDRI (1) p. 76; MAZZETTI (225) p. 441.—*E. plagiosomus*; ALESSANDRI (1) p. 75.—*E. pomeli*, Tortonian, plain of Chellif, Algeria; REPELIN (279) p. 175.—*E. productus* (p. 439), *E. rostratus* (p. 439), *E. scutiformis* (p. 440), *E. similis* (p. 438), *E. sphaericus* (p. 440), *E. stelliferus* (p. 442), *E. studei*? (p. 440), *E. subangulatus* (p. 438), *E. subcylindricus* (p. 438), *E. subellipticus* (p. 439), *E. subquadrangulatus* (p. 439); MAZZETTI (225).—*E. subrostratus*, probably Belgian Miocene, not British; BELL (83) p. 10.—*E. sulcatum*, Lower Eocene of Djebel Coubaras, Algeria; REPELIN (279) p. 121.
- E. soyei*, Miocene, Brittany; SEUNES (305).—*E. zlatarskii*, volcanic tuff, Eocene, above Kavak-Mahle near Haskovo, Bulgaria; BONTSCHEFF (40) Jahrb. geol. Reichsanst. xlv, p. 369, pl. iv: n. spp.
- Echinometra lucunter*; WHITELEGGE (346) p. 156: Kermadec Is.; FARQUHAR (83) p. 188: colour of spines; PFEFFER (267) p. 46.—*E. oblonga*, Funafuti; WHITELEGGE (346) p. 156.

*Echinometridæ*, classificatory characters discussed (p. 487), divided into Oligoporous genera (*Salmacinae*) (p. 494) and Polyporous (*Cyphosominae*) (p. 498); LAMBERT (179).

†*Echinopsis nattheimensis* may be *Archæodiadema*; GREGORY (106) p. 319.

†*Echinopatagus*:—*E. colleigni*; ALMERA (3) pp. 567 & 568; KILIAN (157) pp. 753, 754, 756: vide *Toxaster*.—*E. cordiformis*, referred to *Toxaster retusus*; LAMBERT in KILIAN (157) p. 736.

*Echinothrix calamaris*, colour; PFEFFER (267) p. 45.—*E. turcarum*, colour of spines; PFEFFER (267) p. 45: colour and measurements, Funafuti; WHITELEGGE (346) p. 155.

†*Echinothurida*, affinities with *Pedinidae*; GREGORY (108): compared with *Perischoechinidae*; TORNQUIST (326) p. 59.

*Echinus acutus*; KOEHLER (163) p. 473, & (164) p. 92.—*E. alexandri*, first found in Bay of Biscay, 1710 m., variations from type described; KOEHLER (163) p. 473, & (164) p. 92, figg. 4, 18, 19.—*E. angulosus*; WHITELEGGE (346) p. 156.—*E. elegans*; KOEHLER (163) p. 473, & (164) p. 92.—*E. esculentus*; DAHL (62) p. 172; +BELL (33) p. 8: parasitic copepod; SCOTT (300): activities of amoebocytes; THÉEL (325) p. 50.—*E. hungaricus* Laube, specimen causing reference of *E. dux* to this species; VINASSA DE REGNY (334) p. 147: probably an *Anapesus*; LAMBERT in Review of VINASSA DE REGNY (334).—†*E. lusseri*, referred to *Triplacidia*; LAMBERT (179) p. 504.—†*E. lyelli*; BELL (33) p. 8.—*E. magellanicus*; MEISSNER (228) p. 87.—*E. microtuberculatus*; MARCHISIO (216) p. 4: pluteus; SEELIGER (304): irritability of mesenchyme cells; DRIESCH (75): cleavage under compression; ZIEGLER (354) p. 67: movements of larvæ; ZIEGLER (355) p. 143: mitosis; LAUTENBACH (183) and HERTWIG (128).—*E. miliaris*; +BELL (33) p. 8: stereom formation by special amoebocytes; THÉEL (325) p. 55.—†*E. nortoni* A. Bell, is syn. of *Psammachinus sphaeroideus* Cott. (p. 8); +*E. norvegicus* and +*E. paucimiliaris* (p. 9); BELL (33).—*E. sphaera*; KOEHLER (163) p. 475 & (164) p. 97.—†*E. woodi* and †*E. woodwardi*; BELL (33) p. 8.

†*Enallaster*:—*E. delgadoi*, from Lebanon; LORIOI (195) p. 165.—*E. (Toxaster) scoticus*, is nearly allied to *E. granosus*; SHARMAN & NEWTON (306) p. 254.—*E. syriacus*, variation from type; LORIOI (195) p. 164.

*Encope*:—†*E. chilensis*, Philippi, is from Pliocene of Central America; IHERING (136): is it *Encope*, *Mellita*, or *Monophora*? LAHILLE (176) (p. 437).—*E. emarginata*, specimen with only 2 genital pores (p. 435); *E. grandis* from C. Frio, Brasil, or is it *E. emarginata* convergent with *E. grandis*? (p. 436); *E. michelini* closely related to *E. emarginata*, also to *Monophora darwini* (p. 434); LAHILLE (176).

†*Eocidaris*, rehabilitated; TORNQUIST (327) p. 772: compared with *Archæocidaris*, maintained, including *E. drydenensis*, *E. scrobiculata*, and *E. verneuilana*; TORNQUIST (326) p. 38.

*E. (?) acuaria*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Assoc. xiv, p. 376, no fig., n. sp.

†*Epiaster*:—*E. distinctus*; ALMERA (3) p. 569.—*E. gibbus*; STOLLEY (320) p. 272.—*E. trigonalis*; PARONA & BONARELLI (258) p. 66.

*Euechinoidea*, sub-cl. defined, includes orders *Regulares* and *Irregulares*; ZITTEL (356) p. 185: Revised according to Duncan; ZITTEL-EASTMAN (357) p. 223.

†*Euspatangus*:—*E. elongatus*, *E. lateralis*, *E. minimus*, *E. navicella*, *E. ornatus*; BOTTO-MICCA (41) pp. 367 & 368.

*E. cairensis*, Eocene, Ouadi-el-Tih, nr. Cairo, incl. *E. formosus* Lorioi, pars; LORIOI (196) Mem. Soc. Geneve, xxxii, p. 4, pl. i, n. sp.

*Euechinus rarituberculatus* Bell, is syn. of *E. chloroticus*, specimen measured, spicules of tube-feet figd.; FARQUHAR (83) p. 188.

- +*Fibularia*, 5 spp. recognised, the views of Lambert as to interchange of name with *Echinocyamus* combated; LORIOLO (196) p. 8.—*F. lorioli*, Egypt, compared with *F. subglobosa*; LORIOLO (196) p. 6, pl. i.
- +*Gagaria*, syn. of *Thylechinus* (p. 496), *G. atacica* referred to *Thylechinus* (p. 500), *G. biarritzensis*, *G. gauthieri*, and *G. pegoti*, referred to *Microspidia* (p. 500); LAMBERT (179).
- +*Galerites*:—*G. albo-galerus*; FOURNIER (85) pp. 161, 164.—*G. castanea*; SHARMAN & NEWTON (306) p. 252.
- +*Gauthieria*, place in system; LAMBERT (179) p. 498: apex compared with *Rachiosoma* and *Acrosalenia*; LAMBERT in FORTIN (84).—*G. radiata* (olim *Cyphosoma*) Sorignet; LEONHARD (187) p. 40: apex figured; LAMBERT (179) p. 510: its geol. and geogr. distrib., distinguished from *G. broeckii*; LAMBERT (180) p. 152: var. *granulosa*, maintained as var., Senonian, Elbeuf; LAMBERT in FORTIN (84): figures really  $\times 2$  not  $\times 4$ ; LAMBERT in abstract.
- G. broeckii*, Cretaceous, Danian, "Poudingue de la Malogne," Ciply, a descendant of *G. radiata* with which it was confused by Cotteau; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 152, pl. iv, n. sp.
- Glyphopneustes*, incl. *Coptophyma*, place in system; LAMBERT (179) p. 494.
- Glyphostomata*, sub-order defined, includes families *Salenidae*, *Diadematidae*, *Echinidae*; ZITTEL (356) p. 187.
- +*Glypticus hieroglyphicus*; HUG (133) p. 404: lower Coralline Oolite near Völkens in Posen; GALLINEK (93) p. 404.
- +*Glyptocidaris*, syn. of *Cyptosoma*; LAMBERT (179) p. 499.
- +*Glyptocyphus*, place in system; LAMBERT (179) p. 498.
- Gnathostomata*, sub-order defined, includes families *Echinoconidae*, *Conoclypeidae*, *Clypeastridae*; ZITTEL (356) p. 191.
- +*Gomphechinus*, redefined, place in system; LAMBERT (179) p. 516.
- Goniocidaris*, growth discussed; JACKSON (139) p. 234.
- +*Goniophorus* sp.? "very aberrant variety of *G. lunulatus*," Chloritic Marl, loc. not given; JUKES-BROWNE & HILL (150) p. 143.
- +*Guettaria rocardi*, redescri. with additions to Cotteau's diagnosis, compared with *G. angladei*, apex and plastron figd; LAMBERT (178) p. 314, pl. x.
- Helikodiadema*, n. g., with genotype *H. fragile* Wiltshire (olim *Pseudodiadema* [jam *Palpeodiadema* Pomel]); GREGORY (108) Quart. J. Geol. Soc. liii, p. 121.
- Hemiaster*:—+*H. acuminatus*; MAZZETTI (225) p. 427.—+*H. cf. batnensis*; PERON (261) p. 298.—+*H. bufo* not in England; JUKES-BROWNE & HILL (150) p. 143.—+*H. bufo*? and +*H. buklandi*? [sic]; MAZZETTI (225) p. 428.—+*H. cavernosus*; MEISSNER (228) p. 87.—+*H. cotteaudi* (p. 428), +*H. declivus* (p. 427); MAZZETTI (225).—+*H. (Tripylus) excavatus*; MEISSNER (228) p. 89.—+*H. gibbus* (p. 426), +*H. hemiglobus* (p. 427); MAZZETTI (225).—+*H. major*; VINASSA DE REGNY (334) p. 153.—+*H. morrisi* is true name of "Spatangus bufo" C. J. A. Meyer, 1874; JUKES-BROWNE & HILL (150) p. 144.—+*H. pullus*, from *Trigonoarca* beds, Pondicherry; KOSSMAT (172) p. 95, pl. x.—+*H. regulusanus*; FRIČ (91) p. 71.—+*H. rostratus* (p. 426), +*H. semirostratus* (p. 427); MAZZETTI (225).—+*H. sublacunosus*; FRIČ (91) p. 71.—+*H. truncatus* (p. 427), +*H. varus* (p. 426); MAZZETTI (225).
- +*H. blanfordi*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 35, pl. viii.—+*H. ibelensis*, Cenomanian or Turonian, Ain Ibel, Galilee; LORIOLO (196) Rev. Suisse Zool. v, p. 170, pl. vii.—+*H. kfourensis*, Cenomanian or Turonian, Kfour, Lebanon, allied to *H. tumidosus*; op. cit. p. 172, pl. viii.—+*H. mæstrichtensis* based on "*Micraster leskei*" of Bosquet, which is redescribed; SCHLUETER (297) Zeitschr. deutsch. geol. Ges. xlix, p. 32, footnote, pl. ii.—+*H. oldhami*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 36, pl. viii.—+*H. tamulicus*, *Trigonoarca*

- beds,  $\frac{1}{2}$  mile W. of Rautankupam, Pondicherri; KOSSMAT (172) Rec. Geol. Surv. India, xxx, p. 96, pl. v, fig. 5 : n. spp.
- †*Hemicidaris*:—*H. crenularis*; FOURNIER (85) pp. 101, 113, 118, 121.—*H. crenularis*?, *H. intermedia*, and *H. cf. lestoguis*; HUG (133) p. 403.—*H. mespilum* referred to *Rhabdocidaris*; LAMBERT (179) p. 484.
- H. ghazirensis*, Cenomanian, perhaps Senonian, Ghazir (outside the village) Lebanon, Syria; LORIOI (195) Rev. Suisse Zool. v, p. 147, pl. vi.—*H. zeguellensis*, *Pteroceras* bed, near Tlalet, E.S.E. of Bir Zeguellem, S. Tunis; GAUTHIER (98) pp. 9, 16, pl. xxxii : n. spp.
- †*Hemipatagus cordiformis* and †*H. grignonensis*; MAZZETTI (225) p. 437.
- †*Hemipneustes*, redescribed, discussed and maintained, its six known species compared; NOETLING (248) p. 26.—*H. italicus*; ANGELIS D'OSSAT & LUZZI (9) p. 66; MAZZETTI (225) p. 436.—*H. leymeriei* (p. 32, pl. vii) and *H. pyrenaicus* (p. 29, pls. vi & vii), Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248).
- H. compressus*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 34, pl. vii, n. sp.
- †*Hemithylus*, n. g., with genotype *H. rejaudryi* Cotteau (olim *Thylechinus*); ARNAUD (14) Act. Soc. Bordeaux, xlviii, p. 236: perhaps only young of *Rachiosoma*; LAMBERT (179) p. 498.
- †*Heteractis*, subgenus nov. of *Actinopsis*, for *A. heteroporus* (q.v.) and *Cyphosoma lloræ* Cott.; LAMBERT (179) pp. 500, 509.
- †*Heteraster*:—*H. couloni*; KILIAN (157) p. 761.—*H. oblongus*; ALMERA (3) pp. 567–571.
- †*Heterobrissus montesii*; MAZZETTI (225) p. 436.
- Heterocentrotus mamillatus*; WHITELEGGE (346) p. 156.—*H. trigonarius*; PFEFFER (267) p. 46.
- †*Heterocypeus semiglobus*, redescri. fr. Portugal; LORIOI (193) p. 36.
- Hipponoe variegata*; PFEFFER (267) p. 46.—†*H. Parkinsoni* var. nov. *gahardensis*, Miocene, Brittany; SEUNES (305).
- †*Holaster*:—*H. bouilleti*; FOURNIER (85) p. 164.—*H. lævis* (p. 796), *H. lardyi* (p. 721); KILIAN (157).—*H. perezi*; KILIAN (157) p. 796; PARONA & BONARELLI (258) p. 65.—*H. planus*, including *H. subglobosus*; LEONHARD (187) p. 41.—*H. cf. subglobosus*; FOURNIER (85) pp. 157, 163.—*H. suborbicularis* as figd. by Wright in Pal. Soc. Monogr. probably not same as figd. by d'Orbigny in Pal. franc.; JUKES-BROWNE & HILL (150).—*H. sp.*, Cenomanian, Devon; *op. cit.* p. 144.
- H. syriacus*, Cenomanian or Turonian, Kfour, Lebanon; LORIOI (195) Rev. Suisse Zool. v, p. 163, pl. vii, n. sp.
- †*Holectypus*:—*H. cenomanensis*, from Lebanon, incl. *H. serialis* Lartet; LORIOI (195) p. 155.—*H. corallinus*, near Bir Zeguellem, S. Tunis; GAUTHIER (98) p. 8, pl. xxxii.—*H. crassus*; PERON (261) p. 298.—*H. depressus*; FOURNIER (85) p. 117: (including *H. ormoisianus* Favre non Cotteau); PARONA & BONARELLI (259) p. 80.—*H. excisus*, from Lebanon (p. 156, pl. vi), *H. larteti* (p. 157, pl. vi); LORIOI (195).—*H. neocomiensis* (p. 721), *H. orificiatus* (p. 679); KILIAN (157).—*H. punctulatus*; PARONA & BONARELLI (259) p. 80.
- H. baluchistanensis*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 18, pl. iii, n. sp.
- Holostomata*, suborder defined, includes families *Cidaridæ*, *Echinothuridæ*; ZITTEL (356) p. 185.
- †*Hybochinus*, type of n. fam.; TORNQUIST (171); Abh. geol. Karte Elsass, v, p. 732.
- †*Hypechinus patagonicus* Des. (= *Echinus patagonensis* d'Orb.), San Julian, Patagonia; IHERING (136) p. 336.
- †*Hypsoclypeus doma*, Burdigalian of Algeria; REPELIN (279) pp. 135, 151.
- †*Hypsopatungus*:—*H. marmoræ* (olim *Macropneustes*); BOTTO-MICCA (41)



- p. 366.—*H. meneghini*, fresh characters described, and two varieties, *complanatus* and *convexus*, distinguished; BONTSCHEFF (40) p. 372.
- †*Infulaster*:—*I. excentricus*, Lüneburg; STOLLEY (319) p. 175.
- I. boulei*, Cretaceous, ? Senonian, near Diégo-Suarez, Madagascar; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 331, pl. xiii, n. sp.
- Iranaster*, plastron discussed; LAMBERT (178) p. 324.
- Irregulares*, order defined, includes sub-orders *Gnathostomata*, *Atelostomata*; ZITTEL (356) p. 191.
- †*Isopneustes*, discussed; SCHLUETER (297) p. 23.
- †*Jeronia*, compared with *Lampadaster*; LAMBERT (178) p. 316.
- †*Kanigia*, syn. of *Cyphosoma*; LAMBERT (178) p. 499.
- †*Koninkocidaris* Dollo and Buisseret, is syn. of *Perischodomus*; TORNQUIST (171) p. 725, footnote.
- Laganum depressum*, Funafuti; WHITELEGGE (346) p. 156.
- †*Lampadocorys*, related to *Lampadaster*, its genotype "*Holaster sulcatus*" is from Cenomanian of Rioufroid, near Lus (Drôme); LAMBERT (178) p. 316.
- †*Lampadaster*, rediagnosed, affinities discussed (p. 316); *L. grandidieri*, redescribed, apex figured (p. 317); LAMBERT (178) pls. x and xiii.
- L. gauthieri*, Cretaceous, ? Senonian, near Diégo-Suarez, Madagascar, apex and plastron figured; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 319, pl. xi : n. sp.
- †*Leiosoma* Cotteau non Brandt, nom. mut. in *Trochalosoma* (p. 515); *L. archiaci*, made type of n. g. *Pseudarbacia* (p. 515); *L. babeau*, probably *Phymechinus* (p. 516); *L. bahezrei*, referred to *Gomphechinus* (p. 516); *L. jauberti* Cott., referred to *Phymechinus* (p. 516); LAMBERT (179).
- †*Leiosominæ*, sub. fam. of *Echinometridæ* [should be *Trochalosominæ*]; LAMBERT (179) p. 515.
- †*Lepidechinus*, structure and development discussed on evidence of *L. imbricatus* and *L. rarispinus* (p. 226, pl. vii) : compared with *Perischodomus* (p. 241); JACKSON (139).
- †*Lepidesthes*, alone in family; TORNQUIST (327) p. 732.—*L. colletti* (pp. 200, 210), *L. coreyi* (p. 209), and *L. formosus* (p. 210), discussed; JACKSON (139).
- L. (?) devoniana*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 376, no fig.—*L. wortheni*, Keokuk group, Indiana, arrangement of plates fully described, distinguished from *L. formosus* Miller; JACKSON (139) p. 207, pl. ix : n. spp.
- Lepidesthidae*, n. fam., distinguished from *Lepidocentridæ*, including *Lepidesthes* and *Pholidocidaris*; JACKSON (139) pp. 206, 241.
- †*Lepidocentridæ*, defined; JACKSON (139) pp. 222, 242 : defined, includes *Lepidocentrus*, and discussed; TORNQUIST (327) p. 783.
- †*Lepidocentrus*:—*L. eifelianus*, discussed (pp. 224 & 225); *L. mülleri*, ambulacra and interambulacra described (p. 223); *L. rhenanus*, discussed (p. 224); JACKSON (139).
- †*Lepidocidaris*, discussed; TORNQUIST (327) p. 773.—*L. squamosus*, arrangement of plates fully described, genus maintained; JACKSON (139) p. 220.
- Leptechinus* Gauth., incl. *Peronia*, place in system; LAMBERT (179) p. 494.
- †*Leptechinus*, n. g. with genotype *L. gracilis*, Lower Carboniferous Hunsrückwald, Elsass; TORNQUIST (327) Abh. geol. Karte Elsass, v, p. 63, n. sp. [Nom. gen. preocc., v. supra.]
- †*Linthia*:—*L. arizensis*? (p. 435), *L. aurisleporis* (p. 435), *L. batyolcos* (p. 435), *L. cuoghii* (p. 434); MAZZETTI (225).—*L. capellinii*; BORROMICCA (41) p. 353.—*L. capellinii* Lorient = *Prenaster falax* Mazz. (p. 434), *L. cavernosa* (p. 435), *L. inflata* (p. 435), *L. insignis* (p. 433), *L. locardi*? (p. 434), *L. perplexa* (p. 434), *L. subelliptica* (p. 434), *L. subglobosa* (p. 433); MAZZETTI (225).

- L. cevense*, Pliocene of Ceva, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 353, pl. x.—*L. fraasi*, probably Cenomanian of Ghazir, Lebanon; LORIOL (195) Rev. Suisse Zool. v, p. 174, pl. viii.—*L. peolæ*, Pliocene of Mt Castello, Alessandria, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 352, pl. x.—*L. spiennesensis*, zone of *Bel. mucronata*, Spiennes, Belgium; SCHLUETER (297) p. 48, pl. ii; LAMBERT (180) p. 188 : n. spp.
- †*Lovenia forbesi*, with synonymy; PRITCHARD (272) p. 143.
- †*Lychnidius* Pomel, maintained but removed from *Caratomidae* to *Echino-brissidae*, and distinguished from *Trematopygus* (p. 160); *L. analis* (olim *Nucleolites*) Ag. non d'Orb. (p. 164); *L. scrobiculatus* (olim *Nucleolites* vel *Echinobrius*), redescri. (p. 162, pl. v); LAMBERT (180).
- †*Lysechinidae*, n. fam. of *Plesiocidaroida*, with unique *Lysechinus*, n. g. with genotype *L. incongruens*, St Cassian Beds, Trias, St Cassian, Tyrol; GREGORY (110) p. 1001, n. sp.
- †*Macrodiadema*, n. g. with genotype *M. ciplensis*, Senonian of Ciply, based on spine; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 146, pl. ii, n. sp.
- †*Macropneustes*:—*M. desorii*?; BOTTO-MICCA (41) p. 365.—*M. marmoræ*, vide sub *Spatangus*.—*M. meneghini*, is a *Hypsospatangus*; MAZZETTI (225) p. 429.
- M. zitteli*, volcanic tuff, Eocene, above Kavak-Mahle near Haskovo, Bulgaria; BONTSCHEFF (40) Jahrb. geol. Reichsanst. xlv, p. 372, pl. iv, n. sp.
- †*Magnosia pulchella*; KILIAN (157) p. 768.
- Maretia*:—†*M. grignonensis*; BOTTO-MICCA (41) p. 368.—†*M. paretii*, probably not a *Maretia*; MAZZETTI (225) p. 428: vide sub *Spatangus*.—*M. planulata*; PFEFFER (267) p. 46: colour, Funafuti; WHITELEGGE (346) p. 157.
- Mellita*, characters that separate it from *Encope* (p. 435); *M. stokesi*, its relations to *Monophora* (p. 437); LAHILLE (176).
- Melobosis*, syn. of *Salmacis*; LAMBERT (179) p. 497.
- †*Melonites*:—*M. indianensis*; JACKSON (139) p. 183.
- M. giganteus*, Lower Subcarboniferous, Bowling Green, Ky., arrangement of plates fully described and compared with *M. multiporus*; JACKSON (139) p. 172, pls. iv & v.—*M. septenarius*, Warsaw group of Lower Carboniferous, Buzzard Roost, Franklin Co., Ala., plates of interambulacrum discussed; JACKSON (139) p. 182, pl. ix : n. spp.
- †*Melonitidae*, discussed; TORNQUIST (327) p. 735: defined, includes *Rhoechinus*, *Palaechinus*, *Oligoporus*, and *Melonites*; JACKSON (139) p. 239.
- †*Menuthiaster*, n. g. with genotype *M. cotteau*, Cretaceous, ? Senonian, near Diégo-Suarez, Madagascar, placed in fam. *Aeropidae*, apex and plastron figured; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 325, pl. xi, n. sp.
- Metalia sternalis*; PFEFFER (267) p. 46.
- †*Metaporkhinus*:—*M. convexus*, Tithonian, Tunis; GAUTHIER (98) p. 17: Oxfordian of Orléansville, Algeria; REPELIN (270) p. 51.—*M. transversus*; KILIAN (157) p. 679.
- †*Micraster*:—*M. atacamensis* Philippi, referred to *Schizaster*; IHERING (136) p. 338.—*M. breviporus*, contrasted with *M. cor-testudinarium*; LEONHARD (187) pp. 41 & 42.—*M. breviporus* (v. *Leskei*), Rathsbuch, Lüneburg; STOLLEY (319) p. 143.—*M. brevisulcatus*; MAZZETTI (225) p. 426.—*M. cor-anguinum*; FOURNIER (85) pp. 159 & 160; STOLLEY (319) pp. 147, 171, and (320) p. 272.—*M. cortestudinarium*, var., Rathsbuch, Lüneburg; STOLLEY (319) p. 142: fig. 401 of ZITTEL-EASTMAN (357) should be *M. decipiens*, Lower Senonian, Normandy; LAMBERT, Rev. crit. Pal. i, p. 113.—*M. decipiens*, from Lebanon; LORIOL (195) p. 169.—*M. gibbus*; STOLLEY (319) p. 171, & (350) p. 247:

- redescr. for comparison with *M. meunieri*; LAMBERT (178) p. 327, pl. xii.—*M. glyphus*; STOLLEY (319) p. 171, and (320) p. 272.—*M. gottschei* (p. 147), maintained (p. 171); STOLLEY (319), & (320) pp. 247, 272.—*M. haasi*, maintained; STOLLEY (319) p. 171.—*M. heberti*; FOURNIER (85) p. 164.—*M. idæ* Cott., is syn. of *Brissopsis cretacea*; SCHLUETER (297) p. 37.—*M. leskei* of various authors discussed at intervals; SCHLUETER (297) pp. 18–34.—*M. schrederi*, maintained; STOLLEY (319) p. 171.
- M. (?) ciplensis* [Danian?], Ciply; SCHLUETER (297) Zeitschr. Deutsch. geol. Ges. xlix, p. 18 footnote, pl. ii: separated from *M. gibbus*, *M. senonensis*, and *M. fastigiatus*, diagnosed; LAMBERT (180) p. 185, pl. ii.—*M. fortini*, Middle Senonian, with *M. cor-anguinum*, Carrière Montigny, W. of Dieppe; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 328 footnote, pl. xii: Lambert's description repeated and type refigured in FORTIN (84) p. 90, pl. v.—*M. meunieri*, Cretaceous, ? Senonian, Ambohimarina, near Diégo-Suarez, Madagascar; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 326, pl. xii: n. spp.
- Microcyphus maculatus*, colour of spines; PFEFFER (267) p. 46.
- +*Micropeltis*, redefined, its place in system; LAMBERT (179) p. 516.
- +*Micropsidia*, probably should not contain *Cyphosoma schlumbergeri* and *C. verneuli*, and certainly not *C. ameliæ*; ARNAUD (14) p. 238: place in system; LAMBERT (179) p. 496.
- M. savini*, Middle Eocene of Bertrandon, near Aragon, also Caunettes Hautes (Aude), and Les Garrigues de Villegailhenc (Aude), ambulacra and an abnormal apex figd; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 501, pl. xviii, n. sp.
- +*Micropsina baudoni*, referred to *Circopeltis*; LAMBERT (179) p. 517.
- +*Micropsis*, place in system (p. 499); *M. fraasi*, referred to *Triplacidia* (p. 504); *M. frossardi*, referred to *Micropsidia* (p. 500); *M. lorioli*, referred to *Triplacidia* (p. 504); *M. mokattanensis*, probably a *Thyl-echinus* (p. 503); LAMBERT (179).—*M. petrocoriensis*, compared with other spp. of *Micropsis* and *Micropsidia*, forms a distinct section; ARNAUD (14) p. 238.—*M. petrocoriensis*, referred to *Thyl-echinus* (p. 504); *M. stachei*, referred to *Triplacidia* (p. 504); *M. vilanovæ*, referred to *Micropsidia* (p. 500); LAMBERT (179).
- +*Micocyphosoma*, syn. of *Rachiosoma*; LAMBERT (179) p. 498.
- +*Miotoxaster collegnoi*; LAMBERT in KILIAN (157) p. 756, footnote.
- +*Mistechinus*, n. g. with type *M. mayeri*, Eocene, Oasis de Moïleh (50 kil. S. of Fajouim); LORJOL (196) Mem. Soc. Geneve, xxxii, p. 9, pl. i, n. sp.
- +*Monodiadema*, defined, allied to *Acrosalenia*; GAUTHIER (98) p. 11.—*M. cotteauxi*, redescribed with a young specimen, Pterocerian of S. Tunis; GAUTHIER (98) pp. 12, 16, pl. xxxii.
- +*Monophora darwini*, study of variation, and affinities; LAHILLE (176) & (177): incl. *Scutella geometrica* Bravard, older Tertiary but horizon uncertain; IHERING (136) p. 337.
- +*Nælingia*, nom. nov., vide sub *Protechinus*.
- +*Nucleolites* Desor does not = *Nucleolites* Lam., which has for genotype *N. scutata*, and includes as synn. or subgenn. *Lophopygus*, *Clitopygus*, *Acromasus*, *Taphropygus*, and *Echinobrius* (pars) of Pömel (p. 165); *N. analis* Agassiz non d'Orb., referred to *Lychnidius* (pp. 163 & 164) *N. analis* d'Orb. non Agassiz is syn. of *Trematopygus guillieri* Cott. (p. 164); *N. minimus* Ag., what is it? (p. 170); *N. ovulum* Goldf., referred to *Lychnidius* (p. 163); LAMBERT (180).—*N. pyramidalis*; MAZZETTI (225) p. 437.—*N. roberti*; KILIAN (157) p. 761.—*N. scutata* Lam., discussed; LAMBERT (180) p. 166.—*N. cf. scutatus*; FOURNIER (85) p. 115.—*N. subtrigonatus* Catullo, is *Cardiaster*; LAMBERT (178) p. 331.
- +*Nucleopygus* Ag. non Desor., redefined, with *N. minor* as genotype,

- includes most of *Nucleolites* Desor non Lam., and *Ochetus* Pomel (p. 164); *N. bourgeoisi*, discussed (p. 171); *N. coravium*, redescribed (p. 168, pl. v); LAMBERT (180).
- +*Offaster*:—*O. corculum* and *O. pilula*; STOLLEY (319) p. 147, & (320) pp. 247, 272.
- +*Oligoporus*:—*O. bellulus* (p. 193); *O. blairi* (p. 193); *O. coreyi*, arrangement of plates fully described and their development discussed (p. 186, pl. vi); *O. danæ*, arrangement of plates fully descr., spines (p. 193, pl. vi); *O. nobilis* & *O. sulcatus* (p. 193); JACKSON (139).
- O. missouriensis*, Augusta Limestone ?, Webb City, Mo., arrangement of plates fully described; JACKSON (139) p. 184, pl. ix, n. sp.
- +*Oppissaster cotteri*, Tertiary of Portugal, holotype in Lisbon Museum; LORIOI (193) Mem. Direc. trav. Geol. Portugal, p. 45, pl. xiii, n. sp.
- +*Orthocyphus*, n. g., with genotype *O. pulchellus* Cotteau (olim *Orthechinus* et *Cyphosoma*), and including *O. boreau* (olim *Orthechinus*); ARNAUD (14) Act. Soc. Bordeaux, xlviii, p. 234: syn. of *Thylechinus*; LAMBERT (179) p. 496.
- +*Orthechinus*, syn. of *Thylechinus*; LAMBERT (179) p. 496.—*O. boreau* and *O. pulchellus*, compared with genotype, and removed to nov. gen. *Orthocyphus*; ARNAUD (14) p. 232.—*O. boreau*, referred to *Thylechinus*; LAMBERT (179) p. 504.
- +*Orthopsis*:—*O. repelini*; KILIAN (157) p. 768.—*O. zumoffeni*; LORIOI (195) p. 153.
- O. perlata*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 12, pl. ii, n. sp.
- +*Palaechinoidea*, sub-cl. defined, includes orders *Cystocidarida*, *Bothriocidarida*, *Perischoechinida*; ZITTEL (356) p. 182; ZITTEL-EASTMAN (357) p. 218.
- +*Palaechinus*, compared with *Rhoechinus*; JACKSON (139) p. 200: literary history, rediagnosis; TORNUST (327) p. 735.—*P. gigas*, ambulacra (p. 190), ambulacra and interambulacra described (p. 204, pl. vii); JACKSON (139): interambulacra from Regny; JULIEN (151) p. 130.—*P. paradoxus* is a cup of *Platycrinus*; JAEKEL (144) p. 48.—*P. (?)* sp., Upper Silurian, N. S. W.; MITCHELL (236) with fig.
- P. konincki*, Carboniferous Limestone, Regny, Néronde, and St-Germain-Laval, Central France; JULIEN (151) p. 130, pls. x & xi; TORNUST (327) p. 753.—*P. lacazei*, Carboniferous Limest., l'Ardoisière, Central France; JULIEN (151) p. 128, pl. xvi: redescr., stages of growth, comparison with other spp., nearest *P. gigas*; TORNUST (327) p. 742, pls. xx & xxi.—*P. robineti*, Carboniferous Limest., La Varville, Siguret, Central France; JULIEN (151) p. 129, pl. iii: why not *Rhoechinus*? TORNUST (327) p. 753.—*P. rutoti*, Carboniferous Limest., Domaine des Roches near Savigny-Poil-Fol, Central France; JULIEN (151) p. 129, pl. vi: ? identical with *P. lacazei*; TORNUST (327) p. 753: n. spp.
- +*Palaodiscidae*, diagnosis; GREGORY (109) p. 133.
- +*Palaodiscus ferox*, structure, especially of ambulacra and jaws, affinities discussed; GREGORY (109) p. 129.
- Palaolampas* Bell, not accepted; LORIOI (193) p. 39.
- +*Palaopneustes cristatus*, young stages in development of plastron; LAMBERT (178) p. 323.
- +*Pedina charmassi*; HUG (133) p. 404.
- +*Pedinothuria*, n. g., with genotype *P. cidaroides*, Weisser Jura (? γ), Germany; GREGORY (108) Quart. J. Geol. Soc. liii, p. 119, pl. vii, n. sp.
- +*Peltastes studeri*; KILIAN (158) p. 894.
- Periaster* not accepted; LORIOI (195) p. 175.
- +*Pericosmus*:—*P. aequalis*; MAZZETTI (225) p. 428; BOTTO-MIOCCA (41) p.

- 365.—*P. affinis*; MAZZETTI (225) p. 429.—*P. cf. affinis*; VINASSA DE REGNY (335) p. 155.—*P. callosus* (p. 428), *P. dilatatus* and *P. edwardsi* (p. 429); MAZZETTI (225).—*P. edwardsi* (errore pro *edwardsi*) with var. nov. *minor*, Helvetian of Cassinelle, Piedmont; BOTTO-MICCA (41) p. 365.—*P. latus*; ALESSANDRI (1) p. 70; MAZZETTI (225) p. 428; BOTTO-MICCA (41) p. 364.—*P. malatinus*; MAZZETTI (225) p. 429.—*P. peroni* and *P. spatangoides*; BOTTO-MICCA (41) p. 363.—*P. (an Micraster ?) sp.*; MAZZETTI (225) p. 429.
- P. pedemontanus*, Helvetian, "pietra da Cantoni," Cellamonte, Basso Monferrato, Italy; ALESSANDRI (1) Mem. Mus. Milano, vi (1), p. 70, pl. i, n. sp.
- +*Perischoechinoida*, place of the Order in the system; JACKSON (139) p. 239: Jackson's classification criticised, another phylogeny given; TORNQUIST (327) p. 730: defined, includes families *Lepidocentridæ*, *Melonitidæ*, *Archæocidaridæ*, and *Tiarechinidæ*; ZITTEL (356) p. 183; ZITTEL-EASTMAN (357) p. 219.
- +*Perischoechinidæ*, interrelations discussed, with special reference to *Archæocidaris*; TORNQUIST (326) p. 55.
- +*Perischodonus biserialis* and *P. illinoisensis*, discussed; JACKSON (139) p. 225.
- Peronella* sp., young; PFEFFER (267) p. 46.
- +*Pholidocidaris*, systematic position discussed; TORNQUIST (327) p. 767.—*P. irregularis*, discussed; JACKSON (139) p. 212.
- P. gaudryi*, [n. sp. ?] Carboniferous Limest., L'Ardoisière, Central France, previously referred to by Julien as *Lepidocentrus munsterianus* (1874) and *Melonites gaudryi* (1890); JULIEN (151) p. 131, pl. xvi.—*P. meeki*, Keokuk group, Warsaw, Ill., arrangement of plates fully described; JACKSON (139) p. 210, pl. ix.—*P. tenuis*, Lower Carboniferous, Hunsrückwald, Elsass; TORNQUIST (327) Abh. geol. Karte Elsass, v, p. 767, pls. xxi & xxii: n. spp.
- Phormosoma luculentum*; KOEHLER (163) p. 473, and (164) p. 93.—*P. placenta*; KOEHLER (163) p. 472, and (164) p. 91.
- Phyllacanthus annulifera* and *P. verticillata*; PFEFFER (267) p. 45.
- +*Phymechinus*, redefined, place in system; LAMBERT (179) p. 516.
- +*Phymosoma*, syn. of *Cyphosoma*; LAMBERT (179) p. 499.
- +*Plagiopygus*, n. g. for so-called *Pygorkhynchi* of Tertiary, genotype *P. grignonensis* (olim *Nucleolites*) Defr.; LAMBERT (180) Bull. Soc. Belge Geol., ser. 2, xi, p. 162, footnote.
- Plesiocidaroida*, rediagnosed, affinities discussed; GREGORY (110) p. 1003.
- +*Pleniopeltis*, n. g. with genotype *Leiosoma gourdoni* Cott.; LAMBERT (179) p. 517.
- +*Pleurodiadema*, place in system; LAMBERT (179) p. 495.—*P. stutzi*, large specimen from Oxfordian of Tunis described; GAUTHIER (98) p. 22.
- +*Pliocyphosoma*, syn. of *Cyphosoma*; LAMBERT (179) p. 499.
- +*Plistophyma*, should be subgenus of *Leiosoma* (= *Trochalosoma*); LAMBERT (179) p. 515.
- Porocidaris elegans*, small specimen with genital plates imperforate; KOEHLER (163) p. 472, & (164) p. 89.—+*P. pseudoserrata*, referred to *Rhabdocidaris mespilum*; LAMBERT (179) p. 484.—+*P. schmideli*; GREGORIO (105) p. 111, pl. xxiv.—+*P. serraria*; ALESSANDRI (1) p. 82: and *P. cf. serraria*; VINASSA DE REGNY (335) p. 144.
- +*Proholaster*, n. g., allied to *Collyrites*, with genotype *P. auberti*, Berriasian, Khanet Fiofi in Djebel Meloussi, Tunis; GAUTHIER (98) p. 17, pl. xxxii, n. sp.
- +*Proraster* Lambert, not accepted; SCHLUETER (296) p. 968.
- +*Protechinus*, n. g., with genotype *P. paucituberculatus*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pl. 3, pp. 14 & 16, pls. ii & iii: n. sp. [gen. preocc. *Protechinus* Austin

- 1860, mutatum *Nælingia*; LAMBERT in Rev. crit. Pal. ii, pp. 125-127, 1898].
- +*Protoiara*, n. g. with genotype *Pleurodiadema jutieri* Cotteau; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 495, footnote.
- +*Psammechinus*:—*P. charlesworthi*; BELL (33) p. 8.—*P. dubius*; LORIOI (194) p. 117: redescr. from Portugal, should perhaps include *P. gauthieri* and *P. serresi*; LORIOI (193) p. 6, pl. i.—*P. henslowi*; BELL (33) p. 8.—*P. monilis*; DEPÉRET (64) p. 522: with n. var. *depressa*, Pliocene of Lugagnano near Parma; VINASSA DE REGNY (335) p. 148 & fig.; said not to be this species by LAMBERT in Review.—*P. monilis*?; MAZZETTI (225) p. 418.—*P. cf. monilis*; ŁOMNICKI (192) p. 34.—*P. parvus*; ALESSANDRI (1) p. 81.—*P. theveneti*; KILIAN (157) p. 768.—*P. sphaeroideus*; BELL (33) p. 8.
- P. zumoffeni*, Cenomanian, Valley of Nahr el Kelb, Bykfaya (above the village); LORIOI (195) Rev. Suisse Zool. v, p. 153, pl. vi, n. sp.
- P. n. sp.*; GREGORIO (105) pp. 144 & pl. xxvii.—*P. n. sp.*, Pliocene, Castellarquato; VINASSA DE REGNY (335) p. 149.
- +*Pseudananchis*, compared with *Lampadaster*; LAMBERT (178) p. 317.
- +*Pseudarbacia*, n. g. with genotype *P. archiaci* (olim *Leiosoma*) Cott., Cretaceous; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 515.
- +*Pseudocidaris crenularis*; KILIAN (157) p. 685.
- +*Pseudodiadema*:—*P. brongniarti*; KILIAN (158) p. 894.—*P. dubium*; ALMERA (3) pp. 567 & 568.—*P. lenticulatum*; PARONA & BONARELLI (259) p. 82.—*P. libanoticum* LorioI, 1887; that of Cotteau 1893 changed to *P. saninensis*, nom. nov.; LORIOI (195) p. 148.
- P. jessoni*, Oxford clay, St Ives, Hunts., England; GREGORY (107) Ann. Nat. Hist. (6) xviii, p. 465, n. sp.
- +*Psilosoma*, syn. of *Thylechinus*; LAMBERT (179) p. 497.
- +*Pygaster umbrellæ*; HUG (133) p. 404.
- +*Pygaulus*:—*P. cylindricus* & *P. depressus* (p. 761), *P. desmoulinsi* (p. 768); KILIAN (157).—*P. ovatus*; ALMERA (3) p. 567.
- +*Pygopistes* Pomel, "pas indispensable"; LAMBERT (180) p. 162, footnote.
- +*Pygorhynchus*:—*P. colombi*; MAZZETTI (225) p. 437.—*P. grignonensis* made type of n.g. *Plagiopygus*; LAMBERT (180) p. 162, footnote.
- +*Pygurus*:—*P. lampas*; LEONHARD (187) p. 29: supposed to be from Upper Greensand but proves to be Cenomanian; JUKES-BROWNE & HILL (150) p. 145.—*P. montmollini* (p. 722), *P. rostratus* (pp. 721 & 722); KILIAN (157).
- P. mesteri*, Kimeridgian?, Ksar-Dagra near Tatouine, S. Tunis; GAUTHIER (98), p. 7, pl. xxxii, n. sp.
- +*Pyrina*:—*P. atzensis*, nn. varr. *pentagonalis*, *tumida*, et *globosa*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 19, pls. iii & iv.—*P. houzeaui*, redescr., apex figd, also a senescent individual; LAMBERT (180) p. 156.—*P. ovulum*; GREGORIO (105) p. 111.
- P. gigantea*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 21, pl. iv.—*P. lamberti*, Ghazir (above the village), and *P. zumoffeni*, Ghazir (below the village), Cenomanian, Lebanon; LORIOI (195) Rev. Suisse Zool. v, p. 159, pl. vii: n. spp.
- +*Rachiosoma*, incl. *Micocyphosoma* & *Actinophyma*, place in system; LAMBERT (179) p. 498: vide sub *Gauthieria*.—*R. paucituberculatum*, KILIAN & ZÜRCHER (160) p. 964.—*R. peroni*, apex figd; LAMBERT (179) p. 510.
- R. grossourei*, Danian, "Poudingue de la Malogne," Ciply; LAMBERT (180) Bull. Soc. Belge Geol., ser. 2, xi, p. 154, pl. iii, n. sp.
- Regulares*, order defined, includes suborders *Holostomata*, *Glyphostomata*; ZITTEL (356) p. 185: Polian vesicles and others; LUDWIG (301).
- +*Rhabdocidaris*:—*R. caprimontana*; KILIAN (157) pp. 680, 685 & 686;

- KILIAN & ZURCHER (160), pp. 960-962.—*R. crassissima*; KILIAN (157) p. 721; PARONA & BONARELLI (259) p. 82.—*R. itala*; BONTSCHEFF (40) p. 368.—*R. kiliani*; KILIAN (157) p. 721; KILIAN & LEENHARDT (159) p. 975.—*R. mespilum*, redescr., incl. *Cidaris* vel *Porocidaris pseudoserrata*; LAMBERT (179) p. 484.—*R. ? orbignyana* Desor., spine only, S. Tunis; GAUTHIER (98) p. 16.—*R. pouechi*, spines discovered in association with plates; LAMBERT (179) pp. 484, 486, pl. xviii.—*R. pouyannei*; PERON (261) pp. 295, 298.—*R. trispinata*; SCHLUETER (298) p. 946.—*R. sismondai*, single spine; LORIOI (193) p. 5, pl. i.—*R. tuberosa*; KILIAN (157) p. 721.—*R. sp.*; ROMAN (281) p. 330.
- +*Rhoechinus*, discussed and rediagnosed; TORNUST (327): compared with *Palaeochinus*; JACKSON (139) p. 200.—*R. burlingtonensis* (olim *Palaeochinus*) discussed; *op. cit.* p. 203.—*R. elegans*, ambulacral and interambulacral described; *op. cit.* pp. 190, 204, pl. vii: redescribed, comparison with other species; TORNUST (327) p. 757, pls. xx & xxi.—*R. gracilis* (olim *Paleochinus*), arrangement of plates fully described; JACKSON (139) pp. 193, 201, pl. vii.
- +*Rhynchopygus woodi*; BELL (33) p. 10.
- Salenia*, the species divided into groups *quadratae* and *coronatae* according to scrobicular ornament of tubercles; ARNAUD (15) p. 25.—*S. anthophora* Müller, discussed; LAMBERT (180) p. 148.—+*S. bourgeoisi*, apical plates described, growth-stages measured and distinguished from those of *S. maastrichtensis*; ARNAUD (15) p. 11, pl. i.—+*S. clarkii*?, Cenomanian, Devon; JUKES-BROWNE & HILL (150) p. 145.—+*S. cylindrica*, measured, apical plates described; ARNAUD (15) p. 16.—+*S. fraasi*, redescribed; LORIOI (195) p. 146, pl. vi.—*S. geometrica*, re-established, apical plates described, growth-stages measured; ARNAUD (15) p. 9, pl. i.—+*S. gibba*, apical plates described; ARNAUD (15) p. 5.—*S. hastigera*; KOEHLER (163) p. 472, & (164) p. 89.—+*S. heberti*, recognised in Upper Campanian of Talmont (Charente-Inf.), measurements compared with those given by Schlueter; ARNAUD (15) p. 14.—+*S. maastrichtensis*, discussed; LAMBERT (180) pp. 149, 151.—+*S. petalifera*, var. aff. *S. scutigera*, loc. not given; JUKES-BROWNE & HILL (150) p. 145.—*S. prestensis*; ALMERA (3) p. 568; KILIAN (157) p. 761.—+*S. radians*, measurements and ornament distinguish it from other spp.; ARNAUD (15) p. 15.—+*S. scutigera* Cott., perhaps not the same as *Cidaris scutigera* Goldf.; LAMBERT (180): Cotteau wrongly referred to this *S. geometrica*, *S. maxima*, and *S. petalifera*; ARNAUD (15) p. 5.—+*S. trigonata*, apical plates described, growth-stages and mutations measured; ARNAUD (15) p. 12.
- +*S. belgica*, Cretaceous, Danian; "Poudingue de la Malogne," Ciply, distinguished from *S. minima*; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 150, pl. iii.—+*S. maxima*, Middle Campanian of Saint-Seurin d'Uzet, and Upper Campanian of Talmont (Charente-Inf.) and of Courgeac (Charente), description and measurements of adult and young; ARNAUD (15) Act. Soc. Bordeaux, lii, p. 23, pls. ii & iii.—+*S. pesmet*, Lower and Middle Dordonian, Royan (Charente-Inf.), descr. and measured; *op. cit.* p. 27, pl. ii.—+*S. rejaudryi*, Lower Campanian, Blanzac Livernant, Montmoreau (Charente), description of adult, also of two young (15 & 16 mm. diam.) one with peculiar apex, the other with peculiar madreporite; *op. cit.* p. 18, pl. ii: n. spp.
- +*Salenidia bonissenti* (olim *Salenia*) Cotteau, redescribed and defined; LAMBERT (180) p. 148, pl. ii.
- Salmacis*, place in system, incl. *Melobosis*, *Diploporus*, and *Salmacopsis* (p. 497); +*S. vandenhecki* referred to *Triplacidia* (p. 504); LAMBERT (179).
- Salmacopsis*, syn. of *Salmacis*, LAMBERT (179) p. 497.
- Schizaster*:—+*S. acuminatus*; KAYSER (153); BOTTO-MICCA (41) p. 360:

- contains more than one species, SCHLUETER (296), p. 966.—†*S. ambulacrum*; MAZZETTI (225) p. 431; BOTTO-MICCA (41) p. 360.—†*S. archiaci* (p. 433), †*S. aff. archiaci* (var. *lata*) (p. 430), †*S. baylei* (p. 432); MAZZETTI (225).—*S. baylei*; †*S. bellardii*, redescr. from type; BOTTO-MICCA (41) p. 357.—†*S. belouchistanensis*?; MAZZETTI (225) p. 432.—†*S. canaliferus*; MAZZETTI (225) p. 431: probably incl. *S. orbignyianus* Al. Ag.; VINASSA DE REGNY (335), p. 152: by no means, but rather in a different genus; LAMBERT in Review.—†*S. convexus*; MAZZETTI (225) p. 430.—†*S. corsicus*; BOTTO-MICCA (41) p. 354.—†*S. cristagalli*; MAZZETTI (225) p. 433.—†*S. desori*; MAZZETTI (225) p. 432, BOTTO-MICCA (41) p. 361.—†*S.*, cf. *desori*; VINASSA DE REGNY (334) p. 154.—†*S. djulfensis*?; BOTTO-MICCA (41) p. 361.—†*S. durbani* (p. 431), †*S. exagonalis* (p. 430), †*S. foveatus* (p. 432), †*S. globulus* (p. 432); MAZZETTI (225).—†*S. karreri*; ŁOMNICKI (192) p. 34; BOTTO-MICCA (41) p. 359.—†*S. lacunosus* Goldf., holotype at Bonn, redescr., incl. *Micraster goldfusi* Ag., *Spatangus crassissimus* Desmoul., *Hemiaster amplus* Des., locality and horizon unknown; SCHLUETER (296) p. 963.—†*S. laubei*; MAZZETTI (225) p. 430.—†*S. laubei* Hoernes non Bittner; BOTTO-MICCA (41) p. 356.—†*S. lorioli*; MAZZETTI (225) p. 432.—†*S. maccarthyi*, Lower Eocene of Mt. Raouia, Algeria; REPELIN (279) p. 119.—†*S. major*; BOTTO-MICCA (41) p. 356: incl. *S. canaliferus* Sism. non Agass.; ALESSANDRI (1) p. 72.—†*S. maurus*; BRIVE (45) pp. 597 & 598.—†*S. oviformis* (p. 430), †*S. parkinsoni* (p. 432); MAZZETTI (225).—*S. philippi*; MEISSNER (228) p. 89.—†*S. phrynus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) p. 175.—†*S. princeps*, p. 432.—†*S. pumilius* (p. 433), †*S. rimosus* (p. 431); MAZZETTI (225).—*S. rimosus*; BOTTO-MICCA (41) p. 362: varying in direction of *S. vicinalis*; BONTSCHEFF (40) p. 370.—†*S.* cf. *rimosus*; FOURNIER (85) pp. 179, 182.—†*S. roemeri*; FRIČ (91) p. 72.—†*S. rotundus*; MAZZETTI (225) p. 430.—†*S. scilla*; ALESSANDRI (1) p. 71; MAZZETTI (225) p. 431: discussed; SCHLUETER (296) p. 964: redescribed fr. Portugal; LORIOL (193) p. 43, pl. xii: var. nov. *pliocenica*, from Asti; BOTTO-MICCA (41) p. 534.—†*S. studeri*; MAZZETTI (225) p. 433; BOTTO-MICCA (41) p. 359: var. nov. *haskoviensis*, Eocene "Gelbe Schicht," Haskovo, Bulgaria; BONTSCHEFF (40) Jahrb. geol. Reichsanst. xlv, p. 371.—†*S. trigonalis*; MAZZETTI (225) p. 429.—†*S. vicinalis*; MAZZETTI (225) p. 431, BOTTO-MICCA (41) p. 359: discussed; SCHLUETER (296) p. 965.—†*S.* sp.; VINASSA DE REGNY (335) pp. 153 & 154.
- †*S. ameghinoi*, Lower Tertiary, Gulf of S. Jorge, Patagonia; IHERING (136) Revist. Mus. Paulista, ii, p. 338.—†*S. braidensis*, Placentian of Mt. Castello, Alessandria, and Mt. Capriolo near Bra, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 362, pl. x.—†*S. ozzanensis*, Helvetian "pietra da Cantoni," Ozzano, Basso Monferrato, Italy; ALESSANDRI (1) Mem. Mus. Milano, vi (1), p. 73, pl. ii.—†*S. pyriformis* [errore pro *piriformis*], Tongrian of Carcare, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 358, pl. x.—†*S. aff. scilla*, Helvetian and Astian, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 355 : n. spp.
- Scutella*, relations of genus to *Monophora* with discussion of spp. *subrotunda*, *truncata*, *propinqua*, *striatula*, *producta*, *paulensis*, *stellata*, *smithiana*, in terms of variations noted in *M. darwini*; LAHILLE (176) p. 437.—†*S. bonali* Tournouër, Aquitanian of Pindères (Lot et Garonne), described [If, as is suggested, Tournouër never published a description, this must rank as n. sp.]; LORIOL (193) p. 12.—*S. fayjasi*, probably incl. *S. producta*, *S. propinqua*, and *S. stellata*; LAHILLE (176) p. 439: redescr. fr. Portugal, incl. *S. truncata*, *S. brongniartii*, and *S. smithi*; †LORIOL (193) p. 10, pl. i.—†*S. patagonensis* Des., Sta. Cruz formation, Porto St Desiré; IHERING (136) p. 337.—†*S. striatula*;



- RAULIN (274).—†*S. subrotunda*, redescr. fr. Portugal; LORIOI (193) p. 9, pl. iii: probably incl. *S. paulensis*, *S. truncata*, *S. striatula*, and *S. brongniarti*; *S. subtetragona*, distinct, but allied to *S. subrotunda*; LAHILLE (176) p. 439.
- †*S. lusitanica*, Miocene, various localities in Portugal; LORIOI (193) Mem. Direc. Trav. Geol. Portugal, p. 12, pls. ii & iii.—†*S. roquettei*, Miocene, Portugal, loc. unknown, holotype in Lisbon Museum, perhaps young of *S. faujasi*; *op. cit.* p. 13, pl. iii: n. spp.
- Scutellidæ*, relations of genera, in 3 sections, *Rotulinæ*, *Scutellinæ*, and *Monophorinæ*; LAHILLE (176) p. 440.
- †*Sismondia*:—*S. loghotheti*, Upper Egypt; FOURTAU (86).—*S. marginalis*, var. *minor*; COURJAULT (58).—*S. planulata*, Mokattam, Egypt; FOURTAU (86).
- †*Spatangopsis costata* Torell, possibly an Echinoderm, but not Cystocidaroid; GREGORY (109) p. 133.
- †*Spatangus*:—*S. æquedilatatus*; MAZZETTI (225) p. 422.—*S. amygdala* Goldf. non Klein; SCHLUETER (297).—*S. arcuatus*; MAZZETTI (225) p. 418.—*S. asterias*; BOTTO-MICCA (41) p. 374.—*S. austriacus*; MAZZETTI (225) p. 423; VINASSA DE REGNY (335) p. 155.—*S. austriacus* vel *S. manzonii*; *loc. cit.*—*S. aff. austriacus*; ŁOMNICKI (192) p. 34.—*S. britannus*, redescr. and figd; COTTEAU (56) p. 176.—*S. brissoides*, distinguished from *S. loncophorus*; MAZZETTI (225) p. 423 and pl.—*S. chitonosus*; BOTTO-MICCA (41) p. 371: incl. *S. euglyphus* Mazz. non Laube; MAZZETTI (225) p. 421.—*S. cor*, perhaps syn. of *S. philippii*; MAZZETTI (225) p. 423.—*S. corsicus*; ALESSANDRI (1) p. 69: redescr.; BOTTO-MICCA (41) p. 369: redescr. from Portugal; LORIOI (193) p. 47, pl. xiii: redescr., figd, and distinguished from *S. delphinus*; COTTEAU (56) p. 166: ?; MAZZETTI (225) p. 419.—*S. delphinus*; MAZZETTI (225) p. 418: descr. and figd [according to the author, for the first time]; COTTEAU (56) p. 179.—*S. desmarestii*; BOTTO-MICCA (41) p. 374: ?; MAZZETTI (225) p. 418.—*S. discoidalis* (p. 422); *S. hemiornatus*, holotype was young (p. 424); *S. hemisphaericus* (p. 420); MAZZETTI (225).—*S. marmora*, olim *Macropneustes*, redescr. and figd; COTTEAU (56) p. 171.—*S. mutinensis*; MAZZETTI (225) p. 424.—*S. ocellatus*; MAZZETTI (225) p. 422.—*S.*, cf. *S. ocellatus*, Helvetian, Turin; BOTTO-MICCA (41) p. 373, pl. x.—*S. pagliarolensis*; MAZZETTI (225) p. 421.—*S. pareti*, not a *Mareti*; COTTEAU (56) p. 194; BOTTO-MICCA (41) p. 370.—*S. peroni*, redescr. and figd; COTTEAU (56) p. 169.—*S. philippii*; MAZZETTI (225) p. 420; BOTTO-MICCA (41) p. 374.—*S. podex*; MAZZETTI (225) p. 422.—*S. purpureus*; BELL (33) p. 11: Agassiz non Leske, recent and fossil; MAZZETTI (225) p. 424 and pl.: Leske non Agassiz = *S. spinosissimus* Desor; MAZZETTI (225) p. 425.—*S. regina*; BELL (33) p. 11; MAZZETTI (225) p. 420.—*S. rissoi*; BOTTO-MICCA (41) p. 374: descr. and figd [according to the author, for the first time]; COTTEAU (56) p. 187: ?; MAZZETTI (225) p. 424.—*S. semelansensis*; MAZZETTI (225) p. 423.—*S. sculus* Desor ex Parkinson, does not equal *S. sculus* Agassiz, 1847, but rather *S. philippii* Desor; COTTEAU (56) p. 195.—*S. simplex*, redescr. and figd; COTTEAU (56) p. 174.—*S. spinosissimus*, probably includes *S. purpureus* Lam., *S. sculus* Desor, and *S. meridionalis* Risso; MAZZETTI (225) p. 419 and pl.—*S. subconicus*; MAZZETTI (225) p. 420.—*S. subinermis*; BRIVE (45) p. 598.—*S. tessellatus*, Tortonian, plain of Ohellif, Algeria; REPELIN (279) pp. 174 & 175.—*S. viquesneli*; BONTSCHEFF (40) p. 373.
- S. deydiéri*, quoted as "Cotteau, 1894," but probably is new, Miocene (Burdigalian) of Reillane (Basses-Alpes), and var. *major*, Tortonian of Cucuron (Vaucluse); COTTEAU (56) Bull. Soc. Isère (4) iii, p. 185, pl. x, figg. 2-4, pl. xi, figg. 1 & 2.—*S. gauthieri*, quoted as "Cotteau, 1894," but probably is new, Miocene (Burdigalian) of St Paul-Trois-

- Châteaux (Drôme); *op. cit.* p. 183, pls. ix & x, fig. 1.—*S. heinsi*, quoted as "Gauthier, 1894," but probably is new, descr. but not figd as plate is lost; *op. cit.* p. 190.—*S. manzonei*, Astian of Asti, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 372, pl. x. [Said by LAMBERT in Review to be *S. botto-miccai* Vinassa de Regny.] *S. aff. paretii*, Miocene of Ceva and Clavesana, Piedmont; *op. cit.* p. 371 : n. spp.
- †*Sphærechina*, sub-fam. of *Echinometridæ*; LAMBERT (179) p. 516.
- Sphærechinus*:—†*S. brevispinosus*; BELL (33) p. 9.—*S. granularis*; MARCHISIO (216) p. 4: structure and functions of vesicles connected with lantern; UEKKÜLL (331): larva; SEELIGER (304): karyokinesis; DOFLEIN (70), & HERTWIG (128).
- Sperosoma*, n. g., with genotype *S. grimaldi*, near Azores; KOEHLER (168) Zool. Anz. xx, p. 302, and fig, n. sp.
- †*Stegaster*, compared with *Lampadaster*; LAMBERT (178) p. 316.—†*S. facti* Stolley, is a *Cardiaster*; LAMBERT (180) p. 178.
- †*S.*, n. sp.; FOURNIER (85) Ann. Fac. Marseille, vii, p. 161.
- Stenonia*, plastron discussed; LAMBERT (178) p. 322.
- †*Stereocidaris silenica*; LEONHARD (187) p. 40.
- †*S. oppolensis*, Turonian of Oppeln, Oberschlesien; LEONHARD (187) Palæontogr. xlv, p. 40, pl. v, n. sp.
- †*Stomechinus perlatus*; HUG (133) p. 404.—†*S.* sp.; ROMAN (281) p. 330.
- Stomopneustes variolaris*; PFEFFER (267) p. 46.
- †*Striecthinus*, syn. of *Arcopeltis*; LAMBERT (179) p. 517.
- Strongylocentrotus albus*, with crab parasite; MEISSNER (228) p. 86.—*S. drobachiensis*; †BELL (33) p. 9: (as *Echinus*); HONEYMAN (131) p. 256: ambulacra and inter-ambulacra; JACKSON (139) pl. iii: two specimens with abnormal arrangement of oculars, ? a reversion; OSBORN (252): large size in Greenland waters, six pores to ambulacral plate; VANHOEFFEN (333) p. 235.—*S. eurythrogrammus*, Wellington, N. Z.; FARQUHAR (83) p. 189.—*S. lividus*; †BELL (33) p. 9; MARCHISIO (216) p. 4: karyokinesis; DOFLEIN (70), & HERTWIG (128).—†*S. scaber*; BELL (33) p. 9.—*S. tuberculatus*, New Zealand; FARQUHAR (83) p. 189.
- †*S. cotteauvi*, Coralline Crag, Aldborough; BELL (33) Rep. Yorksh. Soc. for 1896, p. 9, n. sp.
- †*Temnechinus*:—†*T. excavatus*, *T. globosus*, *T. melocactus*, *T. turbinatus*, and *T. woodi*; BELL (33) pp. 7 & 8.
- T. forbesi*, Coralline Crag, Oxford, Ramsholt; BELL (33) Rep. Yorksh. Soc. for 1896, p. 8, no fig, n. sp.
- †*Temnocidaris danica*, includes spines called *Cidaris faujasi*; LAMBERT (180) p. 145.
- Temnopleurus*, place in system, incl. *Toreumatica* and *Temnotrema*; LAMBERT (179) p. 497.
- Temnotrema*, syn. of *Temnopleurus*; LAMBERT (179) p. 497.
- †*Thylechinus*, incl. *Orthechinus*, *Gagara*, *Orthocyphus*, *Psilosoma*; LAMBERT (179) p. 496.—†*T. atacicus* (olim *Cyphosoma*) Cotteau 1861, non 1856, apex figured; LAMBERT (179) p. 503.—†*T. rejaudryi*, redescribed and referred to *Hemithylus*, n. g.; ARNAUD (14) p. 236.
- †*Tiarechinidae* rediagnosed; GREGORY (110) p. 1003.
- †*Tiarechinus* discussed; GREGORY (110) p. 1000: its place in the system; JACKSON (139) p. 243.
- Toreumatica*, syn. of *Temnopleurus*; LAMBERT (179) p. 497.
- †*Tosaster*:—†*T. cf. campichei*; FOURNIER (85) p. 128.—†*T. collegnoi*; FOURNIER (85) pp. 132, 139; KILIAN (157) pp. 753, 754, 756, 768: vide *Echinospatagus*.—†*T. complanatus*, vide *T. retusus*.—†*T. dieneri*, with var. *alta*, redescribed; LORIOLO (195) p. 168, pl. vii.—†*T. gibbus*; KILIAN & ZURCHER (160) pp. 964 & 965.—†*T. granosus*; KILIAN (157)

- p. 722, & (158) p. 893; KILIAN & ZURCHER (160) p. 963; LAMBERT in KILIAN & LEENHARDT (159) p. 973: apex varying in direction of *T. africanus*, figured; LAMBERT (178) p. 321.—*T. aff. T. granosus*, Lower Neocomian of Venasclé; LAMBERT in KILIAN & LEENHARDT (159) p. 974.—*T. granosus*, var. or perhaps n. sp.; LAMBERT in KILIAN (157) p. 726, footnote.—*T. cf. neocomiensis*, with abnormal apical system; LAMBERT in KILIAN & LEENHARDT (159) p. 979, fig. 1.—*T. retusus*; KILIAN (157) pp. 734, 746, and LAMBERT in KILIAN & LEENHARDT (157) p. 736; KILIAN (158) p. 893; KILIAN & LEENHARDT (159) pp. 976, 980; KILIAN & ZURCHER (160) pp. 964 & 965: variation in apex; LAMBERT (178) p. 320.—*T. cf. retusus*; KILIAN & LEENHARDT (159) p. 975.—*T. ricordeaui*; *op. cit.* p. 977.—*T. roulini*, carefully redescribed and figd on evidence of 71 specimens from Aptian of Zapotoca (Santander) in Cordilleras of Bogota; GERHARDT (99) p. 189.—*T. subcavatus*, development of apex; LAMBERT (178) p. 321.—*T. aff. T. subcylindricus*, Lower Neocomian of Moustiers (Basses-Alpes); LAMBERT in KILIAN & LEENHARDT (159) p. 974.
- T. libanoticus*, Cenomanian, Lebanon; LORJOL (195) *Rev. Suisse Zool.* v, p. 166, pl. vii.—*T. lorioli*, Valanginien of Basses-Alpes, also incl. *T. ricordeaui* of "Echinologie Helvétique," pl. xxviii, fig. 5; LAMBERT in KILIAN & LEENHARDT (159) *Bull. Soc. géol. France* (3) xxiii, p. 974: n. spp.
- +*Toxobrissus michelotti* should be *Brissopsis*; BOTTO-MICCA (41) p. 351.
- +*Toxopneustes variegatus*; DUERDEN (77) p. 285.
- +*Trematopygus* d'Orb., maintained but restricted, includes *Plagiochasma* Pomel and *Dochmostoma* (pars) Duncan, genotype is *Nucleolites olfersi* Agassiz; LAMBERT (180) p. 160.—*T. oblongus* d'Orb., referred to *Lychnidius*; LAMBERT (180) p. 163.
- +*Tretechinus*, n. g., with genotype *T. illinoisensis* (olim *Perischodomus*) Worthen, St John, & Miller; TORNQUIST (327) *Abh. geol. Karte Elsass*, v, p. 784.
- Trigonocidaris albida*; KOEHLER (163) p. 472, & (164) p. 90.
- +*Triplacidia*, place in system; LAMBERT (179) p. 497.—*T. vandenheckei*, nov. var. *rothpletzi*, *Lithothamnium* limestone, Haskovo, Bulgaria; BONTSCHEFF (40) *Jahrb. geol. Reichsanst.* xlv, p. 368.
- Tripneustes*:—+*T. parkinsoni*; MAZZETTI (225) p. 418.—*T. variegatus*, Klein, Kermadec Is., descr. and measured; FARQUHAR (83) p. 188.
- +*Typhlechinus*, syn. of *Palechinus*; TORNQUIST (327) p. 737, footnote.
- +*Trochalosoma*, nom. nov. pro *Leiosoma* Cotteau non Brandt, genus defined and placed in system; LAMBERT (179) p. 515.
- +*Xenocidaris*, provisionally retained in *Archæocidaris* on account of spines of genotype *X. clavigera*; JACKSON (139) p. 222.—*X. clavigera*; BEYER (38) p. 89, pl. iii, figg. 80 & 81.
- +*Zeuglopleurus*, syn. of *Echinocyphus*; LAMBERT (179) p. 496.

## (D.)—ASTEROIDEA.

Classification, history of Perrier's views since 1884, criticism of Viguiers and Sladen's schemes, the Euasteroidea are thus classified: Ord. I. *Forcipulata*, Famm. *Brisingidae*, *Pedicellasteridae*, *Zoroasteridae*, *Stichasteridae*, *Asteriidae*; II. *Spinulosa*, Famm. *Echinasteridae*, *Solasteridae*, *Pterasteridae*, *Asterinidae*; III. *Valvulata*, Famm. *Linckiidae*, *Pentagonasteridae*; IV. *Paxillosa*, Famm. *Archasteridae*, *Astropectinidae*; PERRIER (263).

Defined (p. 496), classified (p. 502), in the following system (p. 504); HAECKEL (116):—

Sub-class	Orders	
Palasteriæ (= Encrinasteriæ)	Hypomadrepia	Patrasterida
	Epimadrepia	Palasterinida
Colasteriæ (= Autasteriæ)	Phanerozonia (= Eurystroteria)	Pentaceronia
		Asterisconia
		Solasteronia
		Brisingonia
	Cryptozonia (= Leptostroteria)	

Patrasterida
Palasteriscus
Palmodiscus
Palasterinida
Palasterina
Palæocoma
Archasterida
Porocellanasterida
Astropectinida
Pentagonasterida
Pentacerotida
Gymnasterida
Asterinida
Asteriscida
Ganerida
Solasterida
Stichasterida
Zoroasterida
Pterasterida
Heliasterida
Echinasterida
Urasterida
Brisingida
Brisinga

Very short account of a few fossil forms, with figures after Stürtz; KOKEN (171) pp. 292, 294.—General account with special reference to fossils; ZITTEL (356) p. 170: revised by SLADEN; ZITTEL-EASTMAN (357) p. 205.

Mediterranean, key to genera; LUDWIG (209) p. 281.—General systematic results of study of Mediterranean spp., reduction from 81 names to 24 valid spp. in 14 genera; LUDWIG (210) p. 450.

*Acanthaster echinites*, from Amboina, measured and described, probably includes *A. mauritiensis* Loriol; DOEDERLEIN (69) p. 320, pl. xxi.

*Anasterias*, accepted as genus, with genotype *A. minuta*; PERRIER (263) pp. 32, 35.

*Anthenea acuta*, variation in form due to imperfect preservation; WHITELEGGE (346) p. 159.—*A. tuberculosa*, neanic specimen from Thursday Id.; DOEDERLEIN (69) p. 309.

*Archaster typicus*; DOEDERLEIN (69) p. 305.

*Archasterida*, rediagnosed; PERRIER (263) p. 47.

*Asteracanthion rubens*; DAHL (62) p. 172.—*A. tenuispinus*, var. *elongatus* Lorenz = *Asterias tenuispinus*; LUDWIG (210) p. 345.

*Asterias*, rediagnosed; PERRIER (263) pp. 32, 34, 38: diagnosis, and key to Mediterranean spp.; LUDWIG (209) p. 303: rediagnosed with special reference to Mediterranean genera and key to the 4 spp.; LUDWIG (210) p. 344: how it opens molluscs; SCHIEMENZ (295).—*A. africana* Greeff = *A. glacialis*; LUDWIG (210) p. 365.—*A. (Sporasterias) antarctica* (p. 105, pl. vi), var. *rupicola*, measurements (p. 106, pl. vi); MEISSNER (229).—*A. atlantica* Verrill = *A. tenuispina*?; LUDWIG (210) p. 362.—*A. cilicia*; WAGNER (337) p. 100.—*A. conferta*, redescr. and now first figd; LORIOL (196) p. 17, pl. iii.—*A. edmundi*, nom. nov. pro *Stolasterias neglecta* Perrier (non *A. neglecta* Bell), diagnosis; LUDWIG (209) p. 306: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. distrib., depth 160–485 m.; LUDWIG (210) p. 395, pl. xii.—*A. epichlora*, redescr., and now first figd; LORIOL (196) p. 19, pl. iii.—*A. (Stolasterias) gelatinosa*; MEISSNER (229) p. 103.—*A. glacialis*, colour; MARCHISIO (216) p. 2: diagnosis; LUDWIG (209) p. 305: treated similarly to *A. edmundi*,

- also with bathymetric distrib., food, breeding-period, and regeneration; LUDWIG (210) p. 364, pls. iii, xii.—*A. gracilis* Giebel, syn. of *Craspidaster hesperus*; LUDWIG (210) pp. 60, 451.—*A. gronlandica*, formæ typica et robusta, measured; VANHOEFFEN (333) p. 236.—*A. heptactis* Konrad = *A. tenuispina* Lin.; LUDWIG (210) p. 344.—*A. hispidus* M. Tr., syn. of *A. pentacanthus*, var. *serratus* (q.v.); LUDWIG (210) p. 451.—*A. lutkeni*, redescrib. and now first figd; LORIOLO (196) p. 15, pl. ii.—*A. madeirensis* Stimps. = *A. glacialis*; LUDWIG (210) p. 364.—*A. ophidion*, relations to *A. richardi*; LUDWIG (210) p. 417.—*A. pallida*, development; GOTO (102).—*A. papyracea* Konrad = *Palmipes membranaceus*; LUDWIG (210) pp. 243, 452.—*A. polaris*; HONEYMAN (131) p. 255; VANHOEFFEN (333) p. 237; PERRIER (263) p. 38.—*A. richardi*, diagnosis; LUDWIG (209) p. 307: treated similarly to *A. edmundi*, also with bathymetric distrib., autotomy due to *Myzostoma*, systematic position discussed; LUDWIG (210) p. 403, pl. xii.—*A. rodolphi*, redescrib. from Raoul Id. specimens, and distinguished from *A. scabra*; FARQUHAR (83).—*A. rubens*, Bay of Biscay; PERRIER (263) p. 38: recorded occurrences in Mediterranean all doubtful; LUDWIG (210) p. 345, footnote.—*A. rugispina* Leipoldt, is in part syn. of *A. antarctica*; MEISSNER (229) p. 94: formation of gonads confirms inclusion of *A. spirabilis*, *A. cunninghami*, *Anasterias minuta*, and probably *Calvasterias stolidota*, in this species; LEIPOLDT (186).—†*A. schulzei*, occurrence in Chlomeker Schichten doubtful; FRID (91) p. 72.—*A. spirabilis* Perr., is syn. of *A. antarctica*; MEISSNER (229) p. 106.—*A. squamatus* M. Tr., syn. of *A. jonstoni* (Della Chiaje); LUDWIG (210) p. 451.—*A. (Cosmasterias) sulcifera*; MEISSNER (229) p. 102.—*A. tenuispina*, colour; MARCHISIO (216) p. 2: diagnosis; LUDWIG (209) p. 304: treated similarly to *A. edmundi*, also with bathymetric distrib., breeding period, autotomy; LUDWIG (210) p. 344, pls. iii, xi.—*A. tenuissima* Risso, errore pro *A. tenuispina* = *Luidia ciliaris*; LUDWIG (210) pp. 61, 345, 451.—*A. tessellata*, see *Hippasterias phrygiæ* and *Pentagonaster granularis*.—*A. variolata* Risso = *Hacelia attenuata*; LUDWIG (210) pp. 272, 452.—*A. verrucosa* Risso, = *Chætaster longipes*; LUDWIG (210) pp. 134, 451.—*A. vulgaris*; HONEYMAN (131) p. 255: pyloric cæca; STONE (321).
- A. (Polyasterias) fernandensis*, Juan Fernandez; MEISSNER (229), Arch. Naturg. (1) lxii, p. 104.—*A. koehleri*, Saanich Inlet (Vancouver); LORIOLO (196) Mem. Soc. Geneve, xxxii, p. 21, pl. iii.—*A. (Coscinasterias) plateri*, Juan Fernandez; MEISSNER (229) Arch. Naturg. (1) lxii, p. 103, pl. vi.—*A. saanichensis*, Saanich Inlet (Vancouver); LORIOLO (196) Mem. Soc. Geneve, xxxii, p. 23, pl. ii: n. spp.
- Asteriida*, rediagnosed with synopsis of genera; PERRIER (263) p. 31.
- Asterina*, rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 207, and (209) p. 296.—*A. calcar*, colour-variation; SAVILLE-KENT (290) p. 243.—*A. calcarata*, var. nov. *selkirkii*, Juan Fernandez; MEISSNER (229) p. 97, pl. vi.—*A. cepheus*; PFEFFER (267) p. 47; DOEDERLEIN (69) p. 316.—*A. chilensis*, colour; MEISSNER (229) p. 96.—*A. fimbriata*; MEISSNER (229) p. 97.—*A. gibbosa*; MARCHISIO (216) p. 3: development, specially from gastrula to end of larval stage; MACBRIDE (212): with var. *pancerii*, diagnosis; LUDWIG (209) p. 297: synonymy includes *H. minuta* Olivi, *A. umbilicata* Konrad, *A. minima* Verany, *A. membranacea* Risso, *Asteriscus arceficensis* Greeff, and *A. pancerii* Gasco; diagnoses, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding period, anatomical notes; LUDWIG (210) pp. 207, 451, pls. v, ix.—*A. regularis*, variation in rays, madreporite, and spines, perhaps includes *A. nova-zealandiæ* Perrier; FARQUHAR (83) p. 196.—*A. sp.*, colour-variation; SAVILLE-KENT (290) p. 243.

- Asterinida*, rediagnosed; PERRIER (263) p. 42.
- Asteropsis vernicina*, irregularity in specialised pedicellariæ; FARQUHAR (83) p. 194.
- A. imperialis*, Raoul Id., Kermadecs; FARQUHAR (83) J. Linn. Soc. xxvi, p. 193: n. sp.
- Astellia simplex*, see *Luidia sarsi*, brephic stage.
- Astrogonium*, rediagnosed; PERRIER (263) p. 44.—*A. annectens*; KOEHLER (163) p. 451, & (164) p. 57: Bay of Biscay; PERRIER (263) p. 45.—*A. pulchellum* var. *B.* of Hutton is perhaps *A. abnormale* Gray, perhaps *A. huttoni*, n. s.; FARQUHAR (83) p. 194.—†*A. sp.*?, Pliocene of Piacentino; PRATO (271) p. 48, pl.
- Astropecten*, rediagnosed; PERRIER (263) p. 51: key to Mediterranean spp., and diagnosis; LUDWIG (209) p. 283: rediagnosed, with special reference to Mediterranean genera, and key to spp.; LUDWIG (210) p. 2: feeding on Molluscs; SCHIEMENZ (295).—*A. aurantiacus*, B. of Biscay; PERRIER (263) p. 51: diagnosis; LUDWIG (209) p. 284: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding-period; LUDWIG (210) p. 3, pls. ii, vi.—*A. hispidus*; MARCHISIO (216) p. 3: diagnosis; LUDWIG (209) p. 284: and var. *platyacanthus*, treated similarly to *A. aurantiacus*; LUDWIG (210) p. 16, pls. ii, vi.—*A. brevior* Lorenz, merged in *A. pentacanthus* (q. v.); LUDWIG (210) p. 451.—*A. flammatus* Lorenz, not upheld; LUDWIG (210) pp. 18, 451.—*A. gracilis* Giebel, supposed Mediterranean sp. = *Craspidaster hesperus*, known only from W. Pacific; LUDWIG (210) p. 60.—*A. granulatus*, measured; DOEDERLEIN (69) p. 305, pl. xviii.—*A. hemprichii*, colour; PFEFFER (267) p. 47.—*A. irregularis*; KOEHLER (164) p. 53: variation in spines; KOEHLER (163) p. 450: skiagram; MEEK (226).—*A. jonstoni*, diagnosis; LUDWIG (209) p. 286: treated similarly to *A. aurantiacus*; LUDWIG (210) p. 50, pls. ii, vi.—*A. jonstoni* M. Tr., syn. of *A. spinulosus* Philippi (q. v.); LUDWIG (210) p. 451.—*A. pentacanthus*; MARCHISIO (216) p. 3: diagnosis; LUDWIG (209) p. 285: treated similarly to *A. aurantiacus*; LUDWIG (210) p. 39, pls. ii, vi.—*A. platyacanthus*; MARCHISIO (216) p. 3: var. of *A. hispidus* (q. v.); LUDWIG (210) p. 451.—*A. polyacanthus*, colour; PFEFFER (267) p. 47.—*A. serratus*, B. of Biscay; PERRIER (263) p. 51: described as var. of *A. pentacanthus* and held to include *A. hispidus*; LUDWIG (210) p. 47.—*A. spinulosus*, diagnosis; LUDWIG (209) p. 285: treated similarly to *A. aurantiacus*; LUDWIG (210) p. 31, pls. ii, vi.—*A. squamatus*, colour; MARCHISIO (216) p. 3: syn. of *A. jonstoni* (q. v.).—*A. velitaris*, measured; DOEDERLEIN (69) p. 307, pl. xviii.—*A. zebra* (includes *A. coppingeri* Bell), measured and described; DOEDERLEIN (69) p. 306, pl. xviii.—†*A. sp.* (cf. *A. forbesi* and *A. hispidus*), Miocene of Gombio, Italy; PRATO (271) p. 43, pl.
- †*A. linati*, Middle Pliocene, Piacentino and Parma district, locality uncertain; PRATO (271), Riv. ital. Pal. ii, p. 45, pl. n. sp.
- Astropectinida*, rediagnosed; PERRIER (263) p. 50.
- Astropectinina*, rediagnosed; PERRIER (263) p. 51.
- Briasinga*, diagnosis; LUDWIG (209) p. 308: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 418: rediagnosed; PERRIER (263) p. 20.—*B. coronata*; KOEHLER (163) p. 440: redescrib.; KOEHLER (164) p. 38: Azores; PERRIER (263) p. 20: diagnosis; LUDWIG (209) p. 308: (incl. *B. mediterranea* Perrier), diagnosis, literary history, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding-period, regeneration; LUDWIG (210) p. 418.
- Briasingida*, rediagnosed; PERRIER (263) p. 19.
- Bunaster*, n. g. with genotype *B. ritteri*, Amboina, allied to *Ophi-*

- diaster*; DOEDERLEIN (69) Denk. Ges. Jena, viii, p. 317, pl. xxii : n. sp.
- Calvasterias*, accepted as genus, with genotype *C. asterinoides*; PERRIER (263) pp. 32, 34.
- Calycaster*, rediagnosed; PERRIER (263) p. 27; *C. monacus*, Azores, redescribed, 4 specimens of different ages; PERRIER (263) p. 28, pl. ii.
- Chaetaster*, rediagnosed; PERRIER (263) p. 43: diagnosis; LUDWIG (209) p. 292: rediagnosed with special reference to Mediterranean genera (134), its systematic position discussed (p. 155); LUDWIG (210).—*C. longipes* Bruzelius, B. of Biscay; PERRIER (263) p. 44: redescribed, referred to *Archasteridae*; LUDWIG (202): diagnosis; LUDWIG (209) p. 292: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., breeding-period; LUDWIG (210) p. 134, pls. i, ix.
- Chaetasteridae*, n. fam. provisional; LUDWIG (210) pp. 134, 156.
- Coronaster antonii*, variations from Perrier's type; KOEHLER (163) p. 440: redescribed; KOEHLER (164) p. 40.
- Coscinasterias*, accepted as genus, with genotype *C. calamaria*; PERRIER (263) p. 34.
- Cosmasterias*, accepted as genus, with genotype *C. sulcifera*; PERRIER (263) pp. 32, 35: vide etiam sub *Asterias*.
- +*Crenaster laevis*; RAULIN (274).
- Cribrella*, rediagnosed; PERRIER (263) p. 39.—*C. hyadesi*, redescribed; MEISSNER (229) p. 99.—*C. laeviuscula*, redescribed and now first figd.; LORIOLO (196) p. 14, pl. ii.—*C. oculata*; KOEHLER (163) p. 444, & (164) p. 45; VANHOEFFEN (333) p. 237: Azores and Newfoundland; PERRIER (263) p. 39.—*C. oculata*, Russo, probably neanic *Echinaster sepositus*; LUDWIG (207) p. 112, & (210) pp. 314, 452.
- C. biscayensis*, B. of Biscay, 1410 metres, 6° 21' W., 45° 57' N., allied to *C. antillarum*; KOEHLER (163) Rev. biol. Nord France, vii, p. 444, & (164) Ann. Univ. Lyon, xxvi, p. 45, figg. 12 & 13.—*C. caudani*, B. of Biscay, 650 metres, 4° 25' W., 44° 36' N., allied to *C. oculata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 445, & (164) Ann. Univ. Lyon, xxvi, p. 46, figg. 16 & 17: n. spp.
- Crossaster*, rediagnosed; *C. papposus*, Newfoundland; PERRIER (263) p. 40.
- C. vancouverensis*, Saanich Inlet (Vancouver); LORIOLO (196) Mem. Soc. Geneve, xxxii, p. 12, pl. i: n. sp.
- Ctenodiscus corniculatus*; VANHOEFFEN (333) p. 238.
- Culcita acutispina*, redescribed, variation in form due largely to imperfect preservation; WHITELEGGE (346) p. 157.—*C. coriacea*, defined (p. 316, pl. xxi); *C. grex*, defined (p. 316); *C. novae-guineae*, includes *C. plana* Hartlaub, which is the young form, also *C. acutispinosa* Bell, *C. arenosa* Perrier, *C. pentangularis* Gray, which are stages of growth or local varieties (p. 300, pl. xix); *C. schmideliana*, discussed and defined, with var. *ceylonica* and var. *afriicana* (p. 315, pl. xx); *C. veneris*, defined (p. 316); DOEDERLEIN (69).
- Cycethra simplex*, with forma *subelectilis*; MEISSNER (229) pp. 95 & 96.
- +*Diclidaster*, n. g., allied to *Valvaster*, with genotype *D. gerveyi*, Lower Lias, Mercuer (Ardeche); LORIOLO (196) Rev. Suisse Zool. v, p. 177, pl. viii, n. sp.
- Distolasterias*, genotype *D. sticantha* (Slad.); PERRIER (263).
- Dorigona arenata*; KOEHLER (163) p. 451, & (164) p. 57.—*D. jacqueti*, "paratt pouvoir être réunie à la *D. arenata*"; KOEHLER (163) p. 451: compared with *D. arenata*, intermediate forms; KOEHLER (164) p. 58.—*D. subspinosa*; KOEHLER (163) p. 451: redescribed; KOEHLER (164) p. 59.
- Dytaster*, rediagnosed and *D. intermedius*, Azores, redescribed; PERRIER (263) p. 48, pl. iii.

- Echinaster*, diagnosis; LUDWIG (209): rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 313.—*E. doriae* and *E. tribulus* de Filippi, said to be from Mediterranean, are synn. of *E. spinosus*, and come from E. coast of America; LUDWIG (199), see also LUDWIG (208).—*E. eridanella*; DOEDERLEIN (69) p. 322.—*E. sepositus*, colour; MARCHISIO (216) p. 2: growth-stages; LUDWIG (207): diagnosis; LUDWIG (209) p. 302: synonymy, diagnosis, external description, measurements of old and young, colour, breeding period, development, geogr. and bathymetric distrib.; LUDWIG (210) p. 300, pls. iii, viii: var. *mediterraneus* not upheld; LUDWIG (210) p. 343.—*E. tribulus* = *E. doriae* (q. v.); LUDWIG (208).
- Echinasteridæ*, rediagnosed; PERRIER (263) p. 39.
- Encrinasteriæ*, defined, fossil representatives; ZITTEL (356) p. 171; ZITTEL-EASTMAN (357) p. 207.
- Euasteriæ*, defined, includes *Phanerozonia* and *Cryptozonia*, fossil representatives; ZITTEL (356) p. 172; ZITTEL-EASTMAN (357) p. 208.
- †*Eugaster granifer*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.: n. sp.
- Ferdina kuhlii*; PFEFFER (267) p. 47.
- Forcipulata*, rediagnosed; PERRIER (263) p. 19.
- Ganeria falklandica*, redescribed; MEISSNER (229) p. 94.
- Gnathaster mediterraneus*, v. *Odontaster*. *G. rugosus*, mouth-plates figured; FARQUHAR (83) p. 194.
- †*Goniaster impressæ*; HUG (133) p. 405.
- Goniiodiscus acutus* et *G. placentaeformis*, Heller = *Pentagonaster placenta*; LUDWIG (210) pp. 157, 451.—*G. pleyadella*, large and small specimens described; DOEDERLEIN (69) p. 308, pl. xviii.—*G. sebae*; *op. cit.* p. 309.
- Gymnasteria carinifera*; DOEDERLEIN (69) p. 316.
- Ilacelia*, diagnosis; LUDWIG (209) p. 299: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 271.—*H. attenuata*, diagnosis; LUDWIG (209) p. 300: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., special description of brephic stage, anatomical notes; LUDWIG (210) p. 272, pls. iii, xi.
- Helianter*; HARRINGTON & GRIFFIN (124).—*H. helianthus*; MEISSNER (229) p. 102.
- Hexaster*, rediagnosed; PERRIER (263) p. 41.—*H. obscurus*, Newfoundland, redescribed; PERRIER (263) p. 41, pl. iii.
- Hippasterias phrygiana* recorded, under name *Asterias tessellata*, from Lindisfarne; SUTTON (322) & DISTANT (67).
- Hydrasterias*, accepted as genus, genotype *H. ophidion*; PERRIER (263) pp. 32, 34.
- Hymenaster* rediagnosed, and *H. pellucidus*, Azores; PERRIER (263) p. 40.
- Iconaster longimanus*; DOEDERLEIN (69) p. 307, pl. xviii.
- Labidiaster radiosus*; MEISSNER (229) p. 101.
- Leiaster coriaceus*, colour; PFEFFER (267) p. 47.
- Leptasterias*, accepted as genus, with genotype *L. mülleri*; PERRIER (263) pp. 32, 34.
- Linckia miliaris*; DOEDERLEIN (69) p. 319.—*L. multifora*; *loc. cit.*; PFEFFER (267) p. 47.—*L. pacifica*; WHITELEGGE (346) p. 157.
- Linckiidæ*, rediagnosed; PERRIER (263) p. 43.
- Luidia*, rediagnosed; PERRIER (263) p. 52: diagnosis, key to Mediterranean species; LUDWIG (209) p. 286: rediagnosed, with special reference to Mediterranean genera, and key to the two species; LUDWIG (210) p. 61.—*L. bellonæ*, colour; MEISSNER (229) p. 93.—*L. ciliaris*, redescribed, variations of pedicellaria; KOEHLER (164) p. 50, & (163) p. 448: diagnosis; LUDWIG (209) p. 287: synonymy, diagnosis, measure-



- ments of old and young, external description, colour, geogr. and bathymetric distrib., food, breeding-period, special description of brephic stage, anatomical notes; LUDWIG (210) p. 61, pls. iv, vi: var. *normani*, given up; LUDWIG (210) p. 79.—*L. maculata*; DOEDERLEIN (69) p. 307.—*L. paucispina* Marenz., syn. of *L. sarsi*; LUDWIG (210) pp. 85, 86, 451.—*L. sarsi*; KOEHLER (163) p. 449, & (164) p. 51: Bay of Biscay; PERRIER (263) p. 52: diagnosis; LUDWIG (209) p. 288: treated similarly to *L. ciliaris*, also with description of larva, *Bipinnaria asterigera*; LUDWIG (210) p. 85, pls. iv, vii.
- L. lorioli*, based on *L. bellonæ* Loriol non Lütke, Mexico; MEISSNER (229) Arch. Naturg. (1) lxii, p. 94: n. sp.
- Luidia*, rediagnosed; PERRIER (263) p. 51.
- Marginaster*, diagnosis; LUDWIG (209) p. 295: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 189.—*M. capreensis*, diagnosis; LUDWIG (209) p. 295: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., stomach-cæca, gonads; LUDWIG (210) p. 189, pl. vii.—*M. fimbriatus* Sladen = *M. capreensis* (Gasco); LUDWIG (210) pp. 189, 451.
- Marthasterias foliacea* Jullien; LUDWIG (210) p. 365.
- Mediaster*, rediagnosed (p. 45); *M. stellatus*, Newfoundland, redescribed (p. 46, pl. iv); PERRIER (263).
- Mithrodia clavigera*; DOEDERLEIN (69) p. 322.
- Myxaster perrieri*, Bay of Biscay, 1300 metres, 5° 22' W., 44° 2' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 446, & (164) Ann. Univ. Lyon, xxvi, p. 48, fig. 11: n. sp.
- Nanaster*, n. g. with genotype *N.* (olim *Stichaster*) *albulus* Stimps; PERRIER (263) p. 27.
- Nardoa tuberculata*; DOEDERLEIN (69) p. 319.—*N. variolata*; PFEFFER (267) p. 47.
- Neomorphaster*, discussed (p. 26), rediagnosed (p. 30); PERRIER (263).—“*N. parvifiti*,” errore pro *N. talismani*, redescr., incl. *N. eustichus*, first occurrence in B. of Biscay; KOEHLER (163) p. 443, & (164) p. 44.—*N. talismani*, Azores, incl. *N. eustichus*; PERRIER (263) p. 30.
- Nepanthia brevis*; DOEDERLEIN (69) p. 316.
- Odinia robusta*; KOEHLER (163) p. 440, & (164) p. 40.
- Odontaster*, diagnosis; LUDWIG (209) p. 290: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 125.—*O. mediterraneus*, diagnosis; LUDWIG (209) p. 291: diagnosis, external description, measurements of old and young, S. Adriatic, 414–1196 m.; LUDWIG (210) p. 125.—*O. meridionalis*, measurements; MEISSNER (229) p. 93.—*O. singularis*, measurements; *op. cit.* p. 92, pl. vi.
- Ophidiaster*, rediagnosed; PERRIER (263) p. 43: diagnosis; LUDWIG (209) p. 300: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 299.—*O. agassizi*; MEISSNER (229) p. 99.—*O. canariensis* Greeff = *O. ophidianus* (Lm); LUDWIG (210) pp. 300, 452.—*O. cylindricus*, Funafuti; WHITELEGGE (346) p. 157.—†*O. lessonae* Gasco, is half-grown *O. attenuatus*; LUDWIG (203) p. 56, & (210) pp. 272, 452.—*O. ophidianus*, colour; MARCHISIO (216) p. 3: Azores; PERRIER (263) p. 44: diagnosis; LUDWIG (209) p. 301: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., anatomical notes; LUDWIG (210) p. 300, pls. iii, viii.—*O. pustulatus* includes *O. purpureus*, Perrier; DOEDERLEIN (69) p. 317.—*O. tuberifer*; *loc. cit.*—*O. sp.*, Kermadec Is., described; FARQUHAR (63) p. 195.
- Oreaster reticulata*; DUERDEN (77) p. 285.
- †*Paleaster*:—*P. parviusculus*; HONEYMAN (131) p. 255.—*P. wykoffi*, Hudson River group, near Madison, Ind.; MILLER & GURLEY (235): “Einord-

- nung zur *Palæaster* höchst zweifelhaft"; LUDWIG.—17 spp. of *Cin-cinnati* group redescri.; JAMES (146) pp. 126-133.
- P. longimanus*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 376, no fig.: n. sp.
- †*Palasterina approximata* & *P. speciosa* reld to *Palæaster*; JAMES (146) p. 135.
- Palmipes*, rediagnosed; PERRIER (263) p. 42: rediagnosed with special reference to Mediterranean genera; LUDWIG (209) p. 298 & (210) p. 243.—*P. lobianci*=*P. membranaceus* × *Asterina gibbosa*, 90 m., Grotto of Capri, external description, gonads, interbrachial septa; LUDWIG (210) p. 267, pl. v.—*P. membranaceus*; KOEHLER (163) p. 446, and (164) p. 47: B. of Biscay; PERRIER (263) p. 42: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding-period, anatomical notes; LUDWIG (210) p. 243, pls. v, viii: diagnosis, with bastard *P. lobianci*; LUDWIG (209) p. 298.—*P.*, sp., colour-variation; SAVILLE-KENT (290) p. 243.
- P. sarasini*, Trincomali (Ceylon), allied to *P. pellucidus*; LORIEL (196) Mem. Soc. Geneve, xxxii, p. 11, pl. i: n. sp.
- Pararchasterina*, rediagnosed; PERRIER (263) p. 47.
- Paxillosa*, rediagnosed; PERRIER (263) p. 47.
- Pedicellaster*, rediagnosed (p. 20); *P. parvulus*, Newfoundland, redescribed (p. 21); PERRIER (263).
- Pedicellasterida*, rediagnosed; PERRIER (263) p. 20.
- Pentaceroopsis obtusatus*; DOEDERLEIN (69) p. 310.
- Pentaceros grayi*; PFEFFER (267) p. 47.—*P. muricatus*, colour; loc. cit.—*P. turritus*; DOEDERLEIN (69) p. 309.
- Pentagonaster*, rediagnosed; PERRIER (263) p. 45: diagnosis and key to Mediterranean spp.; LUDWIG (209) p. 293: rediagnosed with special reference to Mediterranean genera, and key to the two spp.; LUDWIG (210) p. 157.—*P. australis*, colour-variation; SAVILLE-KENT (290) p. 243.—*P. balteatus* and *P. concinnus* of Sladen, possibly identical with *P. hystericis*; LUDWIG (203) p. 55, and (210) pp. 186 & 187.—*P. crassus*, B. of Biscay; PERRIER (263) p. 45.—*P. gosselini*, Azores, five variations in marginals and adambulacral spines; loc. cit.—*P. granularis*; SUTTON (322): Azores; PERRIER (263) p. 45: specific characters discussed, Bell's (1892) description criticised; LUDWIG (210) p. 180, footnote.—*P. greeni* Bell, ? syn. of *P. hystericis*; op. cit. p. 185.—*P. hystericis*, diagnosis; LUDWIG (209) p. 294: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib.; LUDWIG (210) p. 179, pl. viii.—*P. mirabilis* Perrier=*P. placenta*; op. cit. pp. 176, 451.—*P. perrieri*; KOEHLER (163) p. 451, and (164) p. 60.—*P. placenta*, diagnosis; LUDWIG (209) p. 294: treated similarly to *P. hystericis*, also with anatomical notes; LUDWIG (210) p. 157, pls. v, vii: first found in B. of Biscay, growth-stages of madreporite; KOEHLER (163) p. 454, and (164) p. 66.
- P. kergroheni*, 1710 metres, B. of Biscay, 6° 52' W., 46° 34' N., allied to *P. concinnus*, *P. balteatus*, and *P. hystericis*; KOEHLER (163) Rev. biol. Nord France, vii, p. 453, and (164) Ann. Univ. Lyon, xxvi, p. 63, figg. 8-10: syn. of *P. hystericis*; LUDWIG (203) p. 55, and (210) pp. 179, 188.—*P. minor*, 400-500 metres, B. of Biscay, 6° 58' W., 46° 40' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 451, and (164) Ann. Univ. Lyon, xxvi, p. 61, figg. 5-7: young of *P. placenta*; LUDWIG (203) p. 55, and (210) p. 176: n. spp.
- Pentagonasterida*, rediagnosed; PERRIER (263) p. 44.
- †*Petraster* & *P. wilberanus*; JAMES (146) p. 134.
- Plutonaster*, rediagnosed; PERRIER (263) p. 48: diagnosis, key to Mediterranean spp.; LUDWIG (209) p. 288: rediagnosed, with special reference to Mediterranean genera, and key to the two spp.; LUDWIG (210)

- p. 104.—*P. bifrons*; KOEHLER (163) p. 450, and (164) p. 56: diagnosis; LUDWIG (209) p. 290: diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib.; LUDWIG (210) p. 118.—*P. granulatus*, Azores, redescribed (p. 49, pl. iv); *P. inermis* (p. 49); *P. notatus*, Azores (p. 49); PERRIER (263).—*P. subinermis*; diagnosis; LUDWIG (209) p. 288: treated similarly to *P. bifrons*, also food, description of brephic stage, anatomical notes, systematic position discussed; LUDWIG (210) p. 105, pls. i, vi.
- Plutonasterinae*, rediagnosed; PERRIER (263) p. 47.
- Podasterias*, with genotype *P. lutkeni*; PERRIER (263) p. 35.
- Polyasterias*, genotype *P. tenuispina* (Lam.); PERRIER (263) p. 34: vide etiam sub *Asterias*.
- Pontaster*, rediagnosed, and *P. limbatus*, Newfoundland; PERRIER (263) p. 47.—*P. marionis*; KOEHLER (163) p. 450: probably var. of *P. tenuispinus*; KOEHLER (164) p. 53.—*P. venustus*; KOEHLER (163) p. 450: some variations from the type; KOEHLER (164) p. 55: Azores; PERRIER (263) p. 47.
- Porania*, rediagnosed; PERRIER (263) p. 42.—*P. antarctica*; loc. cit. and pl. iii, fig. 4; MEISSNER (229) p. 99.—*P. pulvillus*; KOEHLER (163) p. 446, and (164) p. 47: Bay of Biscay; PERRIER (263) p. 43.
- Prognaster*, rediagnosed and discussed; PERRIER (263) p. 22.—*P. grimaldii*, Azores, redescribed; op. cit. p. 23, pl. ii.
- Psilaster*, rediagnosed; PERRIER (263) p. 51.—*P. andromeda*, Azores; loc. cit.: redescribed; KOEHLER (164) p. 52: variation in spines, gradation between paxillæ and granules; KOEHLER (163) p. 449.
- Pteraster personatus*, variation from type; KOEHLER (163) p. 447: redescribed, differences from type; KOEHLER (164) p. 49.
- Pterasteridæ*, rediagnosed; PERRIER (263) p. 40.
- Pycnopodia*, accepted as genus, with genotype *P. helianthoides* (Stimps.); PERRIER (263) pp. 32, 34.
- Quadraster*, n. g. with genotype *Q.* (olim *Stichaster*) *felipes* Sladen; PERRIER (263) p. 27.
- Retaster cribrosus*, includes *R. insignis* Sladen, specimens from Thursday Island and Dar-es-Salaam described; DOEDERLEIN (69) p. 319.
- Sclerasterias*, rediagnosed; PERRIER (263) pp. 34 & 35.—*S. guernei*, Bay of Biscay, redescribed; op. cit. p. 35, pl. i: specimens larger than Perrier's type; KOEHLER (163) p. 441: redescribed; KOEHLER (164) p. 41.
- Smilasterias*, accepted as genus, with genotype *S. scalptrifera*; PERRIER (263) pp. 32, 34.
- Solaster papposus*, 10- and 12-rayed, measurements; VANHOEFFEN (333) p. 238.
- Solasteridæ*, rediagnosed; PERRIER (263) p. 39.
- Spinulosa*, rediagnosed; PERRIER (263) p. 38.
- Sporasterias*, with genotype *S. rugispina* (Stimps.); PERRIER (263) p. 34: vide etiam sub *Asterias*.
- Stellaster incei*, measurements of nine specimens, includes *S. belcheri*; DOEDERLEIN (69) p. 307.
- Stellonia webbiana* d'Orb. = *Asterias glacialis*; LUDWIG (210) p. 364.
- †*Stenaster* (incl. *Urasterella*), *S. grandis*, *S. harrisi*; JAMES (146) pp. 135, 136.
- Stichaster*, defined and emended; PERRIER (263) pp. 26, 31.—*S. albulus*; VANHOEFFEN (333) p. 237.—*S. aurantiacus*; MEISSNER (229) p. 101.—*S. littoralis* Farq. is syn. of *S. suteri* Lorient, colour-difference due to alcohol, variation in shape of rays (p. 197); *S. polyplax*, includes *Tarsaster neozelandicus* Farq. (p. 196); FARQUHAR (83).—*S. roseus*; KOEHLER (163) p. 443, and (164) p. 44: B. of Biscay; PERRIER (263) p. 31.
- Stichasteridæ*, rediagnosed, and its genera discussed; PERRIER (263) p. 25.
- Stolasterias*, emend. as genus; PERRIER (263) pp. 32, 34, 36: vide etiam sub *Asterias*.—*S. glacialis*; KOEHLER (163) p. 441, and (164) p. 41.—

- S. neglecta*, B. of Biscay, redescr.; PERRIER (263) p. 37, pl. i: vide etiam *Asterias edmundi*.—*S. madeirensis*, Azores; PERRIER (263) p. 37.
- †*Tæniaster*, maintained as genus of Asteroidea, with genotype *T. spinosus*; GREGORY (111) p. 1035.—†*T.*? sp.; WHITEAVES (344) p. 160.
- Tarsaster*, merged in *Neomorphaster*; PERRIER (263) p. 26.—*T. neo-zelanicus* FARQUHAR, though probably a *Tarsaster*, is syn. of *Stichaster polyplax*; FARQUHAR (83) p. 196.
- Tethyaster*, rediagnosed; PERRIER (263) p. 50.—*T. subinermis*, in B. of Biscay; KOEHLER (163) p. 450, & (164) p. 56, and PERRIER (263) p. 50.
- Tonia* Gray, 1840, resuscitated with genotype *T.* (vel *Stichaster*) *aurantiaca*; PERRIER (263) p. 27.
- Uniophora*, accepted as genus, with genotype *U. globifera*: PERRIER (263) pp. 32, 35.
- †*Uraster rubens*; BELL (33) p. 12.
- †*Urasterella*, vide sub *Stenaster*.
- Valvulata*, rediagnosed; PERRIER (263) p. 43.
- Zoroaster fulgens*; KOEHLER (163) p. 442, and (164) p. 42.
- Z. trispinosus*, 650 metres, Bay of Biscay, 4° 25' W., 44° 36' N., adult, also marine specimen from 1750 metres, 7° W., 46° 28' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 442, and (164) Ann. Univ. Lyon, xxvi, p. 42, figg. 14 & 15: n. sp.
- Zoroasterida*, rediagnosed; PERRIER (263) p. 21.

#### (E.)—OPHIUROIDEA.

- Ophiodea* (= *Ophiuroidea*) defined (p. 487), classified (p. 494) into Sub-cl. I. *Palophiura*, Ord. 1, *Allostichia* (*Protophiurida*), 2, *Zygostichia* (*Ophiurina*); Sub-cl. II, *Colophiura*, Ord. 3, *Ophioctonia* (*Ophioglyphida*, *Ophiocomida*, *Ophiomyxida*), 4, *Eurygonia* (*Astroporpidia*, *Astrophytida*); system on p. 504; HAECKEL (116).
- General account with special reference to fossils; ZITTEL (356) p. 166, ZITTEL-EASTMAN (357) p. 200.
- Classification of Palæozoic Ophiuroidea; GREGORY (111).
- ††*Acroura* sp.; WAGNER (337) p. 100.
- †*Aganaster*, maintained but not rediagnosed (p. 1039): *A.* sp., Miller & Gurley, 1890, is not an *Aganaster* but allied to *Lapworthura* (p. 1038); GREGORY (111).
- Amphilepis norvegica*; KOEHLER (164) p. 74.
- Amphiura angularis*; KOEHLER (166) p. 244.—*A. chiajei*; KOEHLER (165) p. 209, and (166) p. 243.—*A. duplicata*; KOEHLER (165) p. 208, and (166) p. 244: variations in buccal papillæ; KOEHLER (164) p. 74.—*A. elegans*, small var., near Gisborne, N. Z., colour in life; FARQUHAR (83) p. 191.—*A. filiformis*; KOEHLER (165) p. 209, and (166) p. 244: colour; MARCHISIO (216) p. 4.—*A. squamata*; KOEHLER (165) p. 212: development of ovoid gland (p. 378), currents of madreporite (p. 381), right hydrocoel in (p. 391); MACBRIDE (212).—*A. sundevalli*, measurements; VANOEFFEN (333) p. 240.
- A. brocki*, Thursday Id.; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 286, pl. xv.—*A. cavilleryi*, off Colombo, 593 fms.; Mouth of the Krishna, 753 fms., allied to *A. incisa*; KOEHLER (169) Ann. Sci. nat. iv, p. 330, pl. vii.—*A. denticulata*, 155 metres, off Newfoundland, 46° 50' N., 50° 11' 45" W.; KOEHLER (165) Mem. Soc. zool. France, ix, p. 209.—*A. dispar*, Laocadive Is., G. of Bengal, and Colombo, 193–676 fathoms; KOEHLER (169) Ann. Sci. nat. iv, p. 334, pl. vii.—*A. frigida*, off Colombo, 675 fathoms, allied to *A. incisa* and *A. cavilleryi*; *op. cit.* p. 332, pl. vii.—*A. grandis*, 2620 metres, 38° 38' N., 30° 33' W.; KOEHLER (166) Mem. Soc. zool. France, ix, p. 246.—*A. longispina*,

- 861 metres, Azores, 38° 48' N., 30° 19' W., allied to *A. grandisquama*; KOEHLER (165) Mem. Soc. zool. France, ix, p. 211, (164) p. 74, and (166) p. 244.—*A. partita*, Laccadive Is., 444 metres, allied to *A. duplicata*; KOEHLER (169) Ann. Sci. nat. iv, p. 336, pl. vii.—*A. pusilla*, among roots of *Lessonia* and *Macrocystis*, Wellington, N. Z.; FARQUHAR (83) J. Linn. Soc. xxvi, p. 191.—*A. richardi*, 1165 metres, 38° 26' N., 28° 51' W., N. Atlantic; KOEHLER (166) Mem. Soc. zool. France, ix, p. 245 : n. spp.
- †*Aspidura*:—*A. ludeni*; WAGNER (337) p. 100.
- A. italica*, Muschelkalk, Recoaro; CREMA (59) Atti Ist. Veneto, liv, p. 855, pl. iia : n. sp.
- Astronyx loveni*, KOEHLER (169) p. 370.
- A. locardi*, Bay of Biscay, 1710 metres, 7° W., 46° 28' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 470, and (164) Ann. Univ. Lyon, xxvi, p. 88, fig. 25 : n. sp.
- Astrophyton agassizi*; HONEYMAN (131) p. 254.—*A. clavatum*; PFEFFER (267) p. 48.
- A. sculptum*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 299, pl. xviii : n. sp.
- Bristanga endecacnemus* first found near Bergen; APPELLÖF (13) p. 4.
- †*Bundenbachia*, rediagnosed; GREGORY (111) p. 1033.
- †*Cholaster* Worthen & Miller, allied to *Aganaster*; GREGORY (111) p. 1040.
- †*Eoluididae*, n. fam., founded for *Eoluidia*, which is redefined, and *Eospondylus*, *Miospondylus*, and *Aganaster* (qq. v.); GREGORY (111) p. 1038.
- †*Eospondylus*, n. g., with genotype *E. (olim Ophiura) primigenia* (Stürtz); GREGORY (111) P. Zool. Soc. London, 1896, p. 1039.
- †*Eucladiidae*, defined, and *Eucladia*, arms described and figured, referred to *Streptophiura*; GREGORY (111) p. 1040.
- †*Eugaster*, rediagnosed from Hall's figures; GREGORY (111) p. 1035.
- Euryale ludwigi*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 299, pl. xvii : n. sp.
- Euryalea*, defined, fossil representatives; ZITTEL (356) p. 168.
- †*Furcaster*, rediagnosed, has no ventral arm-plates; GREGORY (111) p. 1038.
- Gorgonocephalus eucnemis*; KOEHLER (165) p. 213; VANHOEFFEN (333) p. 241.
- Gorgonocephalus cornutus*, imperfect description, Indian Ocean; KOEHLER (167) Zool. Anz. xx, p. 168: Andaman Is., 45–270 fathoms, neanic specimen; KOEHLER (169) Ann. Sci. nat. iv, p. 368, pl. ix.—*G. levigatus*, imperfect description, Indian Ocean; KOEHLER (167) Zool. Anz. xx, p. 168: Colombo, 142–400 fathoms; KOEHLER (169) Ann. Sci. nat. iv, p. 365, pl. ix : n. spp.
- †*Lapworthura miltoni*; GREGORY (112) p. 97, fig. 154.
- †*Lapworthuridae*, n. fam., including *Lapworthura*, n. g., with genotype *L. (olim Protaster) miltoni* (Salter), also *Furcaster*, *Palastropecten*, and *Aganaster* sp. (qq. v); GREGORY (111) p. 1037.
- †*Lysophiura*, ord. nov.; GREGORY (111) p. 1030.
- †*Miospondylus*, n. g., with genotype *M. (olim Ophiura) rhenanus* (Stürtz); GREGORY (111) P. Zool. Soc. London, 1896, p. 1039.
- †*Onychasteridae*, defined; GREGORY (111) p. 1040.
- Ophiacantha abyssicola*; KOEHLER (163) p. 463, (164) p. 79, and (165) p. 213.—*O. bidentata*; KOEHLER (163) p. 463, (164) p. 79, and (165) p. 212; VANHOEFFEN (333) p. 241.—*O. dallasi*, from Amboina, described; DOEDERLEIN (68) p. 291, pls. xiv, xvi.—*O. rosea*, variations from type; KOEHLER (163) p. 463, and (164) p. 81.—*O. setosa*; KOEHLER (165) p. 212.—*O. spectabilis*, redescribed, from Bay of Biscay; KOEHLER (163) p. 464, and (164) p. 80, figg. 41 & 42.
- Ophiacantha aristata*, Bay of Biscay, 1700 metres, 6° 15' W., 45° 47' N., allied to *O. aspera*; KOEHLER (163) Rev. biol. Nord France, vii,

- p. 467, (164) Ann. Univ. Lyon, xxvi, p. 84, figg. 43 & 44, and (165) p. 212.—*O. composita*, Nicobar Is., 1590 fms., allied to *O. levispina*; KOEHLER (169) Ann. Sci. nat. iv, p. 350, pl. viii.—*O. duplex*, Colombo, 675 fms., allied to *O. imago*; *op. cit.* p. 352, pl. viii.—*O. gratioiosa*, Laccadive Is., 444 fms., Andaman Is., 240 fms., G. of Bengal, 193 fms., allied to *O. abnormis*; *op. cit.* p. 346, pl. viii.—*O. lineata*, 1165 metres, 38° 26' N., 28° 51' W., allied to *O. aristata*; KOEHLER (166) Mem. Soc. zool. France, ix, p. 247.—*O. pentagona*, Andaman Is., 240–375 fms., allied to *O. stellata*; KOEHLER (169) Ann. Sci. nat. iv, p. 342, pl. viii.—*O. rufescens*, 845 metres, 38° 31' N., 29° 9' W.; KOEHLER (166) Mem. Soc. zool. France, ix, p. 249.—*O. simulans*, Bay of Biscay, 1700 metres, 6° 15' W., 45° 47' N., allied to *O. bidentata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 465, and (164) Ann. Univ. Lyon, xxvi, p. 82, figg. 37 & 38.—*O. sociabilis*, Andaman Is., 1840 fms., G. of Bengal, 1803 fms., allied to *O. discoidea*; KOEHLER (169) Ann. Sci. nat. iv, p. 348, pl. viii.—*O. vestita*, Coast of Coromandel, 195–210 fms., and Andaman Is., 250 fms., allied to *O. hirsuta*; *op. cit.* p. 344, pl. viii.—*O. vorax*, C. Comorin, 1043 fms., allied to *O. longidens*; *op. cit.* p. 353, pl. viii : n. spp.
- Ophiactis abyssicola*, KOEHLER (165) p. 208, (166) p. 243.—*O. balli*; KOEHLER (165) p. 208: redescribed; KOEHLER (164) p. 77, figg. 23 & 24 : redescribed and figured, from Bay of Biscay; KOEHLER (163) p. 461.—*O. modesta*, from Thursday Id., one young with an abnormal 6th ray, relations to *O. affinis* and *O. maculosa*; DOEDERLEIN (68) p. 285, pls. xiv & xv.—*O. savignii*; PFEFFER (267) p. 47.
- O. corallicola*, 950–1710 metres, various stations, Bay of Biscay, on corals *Amphihelia oculata*, allied to *O. cuspidata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 460, and (164) Ann. Univ. Lyon, xxvi, p. 75, fig. 30: near Azores; KOEHLER (165) p. 208: see also KOEHLER (166) p. 243.—*O. lorioli*, G. of Bengal, Laccadive Is., and coast of Malabar, 1091–1300 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 328, pl. vii.—*O. perplexa*, W. of C. Comorin, 719 fms., allied to *O. flexuosa*; *op. cit.* p. 327, pl. vii : n. spp.
- Ophiarthrum elegans*; DOEDERLEIN (68) p. 289: Funafuti; WHITELEGGE (346) p. 160.
- Ophiermus adpersus*, variations from type; KOEHLER (169) p. 316.
- O. abyssalis*, 1674 m., off La Corogne; KOEHLER (166) Mem. Soc. zool. France, ix, p. 2: n. sp.
- Ophiocamax fasciculata*, variations from type; KOEHLER (169) Ann. Sci. nat. iv, p. 360.
- Ophioceramix tenera*, nom. nud.; KOEHLER (167) p. 168: Laccadive Is., 636 fms., Andaman Is., 265 fms., allied to *O. obstricta*; KOEHLER (169) Ann. Sci. nat. iv, p. 317: n. sp.
- Ophiochata hirsuta* (= *O. setosa*), from Amboina; DOEDERLEIN (68) p. 284, pl. xv.
- Ophiokhison ambulator*, nom. nud.; KOEHLER (167) p. 168: Laccadive and Maldive Is., G. of Bengal, Trincomali, and coast of Beloochistan, at depths varying from 200 to 890 fms., allied to *O. fastigatus*; KOEHLER (169) Ann. Sci. nat. iv, p. 337, pl. vii.—*O. modestus*, Andaman Is., 265 fms., type is neanic, allied to *O. tenuispinus*; *op. cit.* p. 340, pl. vii : n. spp.
- Ophiocnida*:—†*O. brachiata*; BELL (33) p. 11.
- O. verticillata*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 287, pls. xiv & xv : n. sp.
- Ophiocoma*:—†*O. bellis*; BELL (33) p. 11.—*O. brevipes*, Amboina; DOEDERLEIN (68) p. 289.—*O. erinaceus*; PFEFFER (267) p. 48; WHITELEGGE (346) p. 160: made var. of *O. scolopendrina*; DOEDERLEIN (68) p. 289.—*O. nigra*; SUTTON (322).—†*O. rosula*; BELL (33) p. 11.—*O.*

- scolopendrina*; PFEFFER (267) p. 48; WHITELEGGE (346) p. 160: var. *alternans*; DOEDERLEIN (68) p. 288.—*O. valenciæ*; PFEFFER (267) p. 48.
- Ophiocoris forbesi*; KOEHLER (165) p. 213.
- O. indica*, Andaman Is., 45–270 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 325, pl. vii: n. sp.
- Ophiocreas* (?) E. of Andaman Is., 1644 fms., imperfect specimen; KOEHLER (169) Ann. Sci. nat. iv, p. 365: n. sp. sine nom.
- Ophiocten sericeum*, measurements; VANHOEFFEN (333) p. 240.
- O. le-danteci*, Bay of Biscay, 1700 metres, 6° 58' W., 46° 26' N., allied to *O. amitimum*; KOEHLER (163) Rev. biol. Nord France, vii, p. 458, and (164) Ann. Univ. Lyon, xxvi, p. 72.—*O. longispinum*, 1850 metres, N. of Azores, 40° 5' N., 29° 48' W.; KOEHLER (165) Mem. Soc. zool. France, ix, p. 204, and (166) p. 243.—*O. scutatum*, 160 metres, Bay of Biscay, 45° 48' N., 5° 38' W., also from Banc de la Grand Sole and Newfoundland, allied to *O. abyssicola*; KOEHLER (165) Mem. Soc. zool. France, ix, p. 206: n. spp.
- Ophioderma*:—+*O. (Ophiarachna) ? hauchecornei*; WAGNER (337) p. 100.—*O. longicauda*, colour; MARCHISIO (216) p. 3.
- Ophioglypha abyssorum*; KOEHLER (166) p. 241.—*O. æqualis*, redescrib., compared with *O. lepida*; KOEHLER (169) p. 297, pl. vi.—*O. albida*; KOEHLER (163) p. 458, (164) p. 71, and (165) p. 203: parasitic *Dactylococcus*; MORTENSEN (244) p. 322.—*O. carnea*; KOEHLER (165) p. 203, and (166) p. 241.—*O. flagellata*, slight variations from type; KOEHLER (169) p. 299.—*O. imbecillis*, very young; KOEHLER (169) p. 303.—*O. irrorata*; KOEHLER (166) p. 241: redescrib.; KOEHLER (164) p. 67: redescrib. and figd. from B. of Biscay; KOEHLER (163) p. 455.—*O. laceratosa*, colour; MARCHISIO (216) p. 3.—*O. lyngmanni*; KOEHLER (164) p. 71.—*O. minuta*; KOEHLER (163) p. 458, & (166) p. 242: redescrib.; KOEHLER (164) p. 72.—*O. orbiculata*, compared with *O. irrorata* (p. 302); *O. palliata*, Maldive Is., slight variation in tentacular scales (p. 298); *O. radiata* (p. 300); KOEHLER (169).—*O. robusta*; HONEYMAN (131) p. 254.—*O. sarni*; KOEHLER (165) p. 203: large individuals only found; VANHOEFFEN (333) p. 239.—*O. sculptilis*, variations from type; KOEHLER (169) p. 301.—*O. sinensis*, var. from Amboina; DOEDERLEIN (68) p. 283, pl. xv.—*O. tessellata*, KOEHLER (165) p. 203.—*O. texturata*; KOEHLER (163) p. 458, (164) p. 71, and (165) p. 203: parasitic *Dactylococcus* (p. 322), growth-stages (p. 321); MORTENSEN (244).—*O. undulata*, slight variations from type; KOEHLER (169) p. 299.
- O. inflata*, off Colombo, 597 fms., allied to *O. tenera* Lyman; KOEHLER (169) Ann. Sci. nat. iv, p. 288, pl. v.—*O. involuta*, G. of Bengal, 1748 fms., allied to *O. irrorata* and *O. orbiculata*; *op. cit.* p. 295, pl. vi.—*O. paupera*, Laccadive Is., 705 fms., and coast of Malabar, 406 fms., allied to *O. convexa*; *op. cit.* p. 290, pl. v.—*O. sordida*, Andaman Is., 561 fms., allied to *O. paupera*; *op. cit.* p. 292, pl. v.—*O. thouletii*, B. of Biscay, 1300 m., 5° 22' W., 44° 2' N., allied to *O. lyngmanni* and *O. palliata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 458, (164) Ann. Univ. Lyon, xxvi, p. 69, figg. 39 & 40, and (166) p. 241: n. spp.
- Ophioteleptis annulosa*; DOEDERLEIN (68) p. 283.—+*O. (Haploaster) gracilis*; BELL (33) p. 11.
- Ophiotypus granulatus*, nom. nud.; KOEHLER (167) p. 168: Port Blair (Andaman Is.) 112 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 315, pl. vi: n. sp.
- Ophiomastix annulosa* (p. 289, pl. xvi); *O. asperula*, redescrib. (p. 290, pl. xv); *O. caryophyllata*, redescrib. (p. 290, pl. xv); DOEDERLEIN (68).—*O. venosa*; PFEFFER (267) p. 48.
- Ophiomastus tumidus*, nom. nud.; KOEHLER (167) p. 167: G. of Bengal, 1310 fms., compared with *O. tegulitus* and *O. secundus*; KOEHLER (169) Ann. Sci. nat. iv, p. 285, pl. v: n. sp.

- Ophiomaza cacaotica*, colour; DOEDERLEIN (68) p. 298, pl. xvii.
- Ophiomitra cordifera*, 1143 metres, 38° 52' N., 30° 28' W.; KOEHLER (166) Mem. Soc. zool. France, ix, p. 250.—*O. globulifera*, Bay of Biscay, 1700 metres, 6° 15' W., 45° 57' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 469, and (164) Ann. Univ. Lyon, xxvi, p. 86, figg. 28 & 29.—*O. integra*, Andaman Is., 220–240 fms., allied to *O. valida*; KOEHLER (169) Ann. Sci. nat. iv, p. 356, pl. ix.—*O. rudis*, Andaman Is., 780 fms., allied to *O. incisa*, *O. chelys*, and *O. dipsacos*; *op. cit.* p. 358, pl. ix : n. spp.
- Ophiomusium lymani*; KOEHLER (163) p. 458, (164) p. 72, (165) p. 204, and (166) p. 242.—*O. planum*; KOEHLER (166) p. 242, and (169) p. 308.—*O. scalare*, redescribed from specimens more adult than type; *op. cit.* p. 308, pl. vi.—*O. validum*, variation from Lyman's description; *op. cit.* p. 307.
- O. elegans*, Laccadive Is., 406 fms., and Andaman Is., 490 fms., allied to *O. eburneum*; KOEHLER (169) Ann. Sci. nat. iv, p. 305, pl. vi.—*O. familiare*, Laccadive Is., 406 fms., allied to *O. eburneum*; *op. cit.* p. 303, pl. vi : n. spp.
- Ophiomyxa australis*; PFEFFER (267) p. 48.—*O. brevispina*, with parasitic gastropod, ? *Stylifer*; DOEDERLEIN (68) p. 298, pl. xvii.—*O. pentagona*, colour; MARCHISIO (216) p. 4.
- O. bengalensis*, Andaman Is., 173–250 fms., allied to *O. serpentaria*; KOEHLER (169) Ann. Sci. nat. iv, p. 363, pl. ix : n. sp.
- †*Ophiopoege* G. Boehm, syn. of *Aganaster*; GREGORY (111) p. 1040.
- Ophiopoeza conjungens*, redescri.; DOEDERLEIN (68) p. 281, pl. xv.—*O. cylindrica*, descr. and figd; FARQUHAR (83) p. 190.—*O. fallax*, colour; PFEFFER (267) p. 47.
- O. custos*, Andaman Is., 45–270 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 321, pl. vi.—*O. danbyi*, Raoul Id., Kermadecs, the few, large arm-spines involve rediagnosis of genus; FARQUHAR (83) J. Linn. Soc. xxvi, p. 190 : n. spp.
- O. aculeata*; KOEHLER (165) p. 208; HONEYMAN (131) p. 254: measurements; VANHOEFFEN (333) p. 241.
- Ophiopleura borealis*; VANHOEFFEN (333) p. 239.
- Ophioplocus imbricatus*; PFEFFER (267) p. 47; DOEDERLEIN (68) p. 283.
- Ophiopsila* sp., crowded in sand; MITSUKURI & HARA (241).
- Ophiopteris antipodium*, Nelson, N. Z.; FARQUHAR (83) p. 192.
- Ophiopyren bispinosus*, Indian Ocean; KOEHLER (167) Zool. Anz. xx, p. 167: Andaman Is., 240–250 fms., compared with *O. brevispinus* and *O. longispinus*; KOEHLER (169) Ann. Sci. nat. iv, p. 312, pl. vi : n. sp.
- Ophiopyrgus alcocki*, nom. nud.; KOEHLER (167) p. 167: G. of Bengal, 1310 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 283, pl. v : n. sp.
- Ophioscolex rectus*, Bay of Biscay, 1410 metres, 6° 21' W., 45° 57' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 462, and (164) Ann. Univ. Lyon, xxvi, p. 78, fig. 31 : n. sp.
- Ophiothela danae*, remarks, a specimen with 3 arms atrophied; DOEDERLEIN (68) p. 297, pl. xvii.
- Ophiothrix alopecurus*; MARCHISIO (216) p. 4.—*O. aristulata*, n. var. *investigatoris*, Andamans and coast of Coromandel, 130–290 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 361, pl. ix.—*O. bedoti*, additional notes; DOEDERLEIN (68) p. 294, pls. xiv, xvi.—*O. fragilis*; KOEHLER (163) p. 470, (164) p. 88, (165) p. 213, and (166) p. 253; MARCHISIO (216) p. 4: development, movements of larva; ZIEGLER (355) p. 136.—*O. hirsuta*; PFEFFER (267) p. 48.—*O. longipeda*, measured (p. 293, pls. xiv, xvi); *O. martensi*, redescri. (p. 291, pls. xiv, xvi); *O. nereidina*, incl. *O. cataphracta* Martens (p. 293, pl. xvi); *O. punctolimbata*, perhaps = *O. longipeda* juv. (p. 294, pls. xiv, xvi); *O. purpurea*, redescri. (p. 296, pls. xiv, xvii); *O. stelligera* (p. 294, pls. xiv, xvi),



- O. striolata*, descr. (p. 295, pls. xiv, xvii); *O. triloba*, Amboina (p. 293, pl. xvi); DOEDERLEIN (68).—†*O. sp.*; BELL (33) p. 11.
- O. belli*, Thursday Id.; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 292, pls. xiv, xvi.—*O. investigatoris*, nom. nud.; KOEHLER (167) p. 168.—*O. lorioli*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 297, pls. xiv, xvii.—*O. vitrea*, Amboina; *op. cit.* p. 295, pls. xiv, xvi: n. spp.
- Ophiotrema*, n. g., with genotype *O. alberti*, 4020 metres, 38° 9' N., 25° 36' W., possibly congeneric with *Ophiacantha bartletti* Lyman; KOEHLER (166) Mem. Soc. zool. France, ix, p. 251; n. sp.
- Ophiotriton*, n. g., with genotype *O. semoni*, Thursday Id.; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 288, pl. xv: n. sp.
- Ophiotrochus panniculus*; KOEHLER (169) p. 312.
- Ophiotypa*, n. g., with genotype *O. simplex*, Indian Ocean and Azores; KOEHLER (167) Zool. Anz. xx, p. 167: G. of Bengal, 1997 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 281, pl. v: n. sp.
- Ophiozona bispinosa*, nom. nud.; KOEHLER (167) p. 168: Port Blair (Andaman Is.), 112 fms., allied to *O. tessellata*; KOEHLER (169) Ann. Sci. nat. iv, p. 319, pl. vi: n. sp.
- Ophiura*:—†*O. albida*; BELL (33) p. 11.—*O. granulata*, see *Ophiocoma nigra*.—†*O. prisca*; WAGNER (337) p. 100.—†*O. texturata*; BELL (33) p. 11.
- O. anna*, 570 fms., 44° 38' N., 54° 6' W., Grand Bank, N. Atlantic, has 6 rays; HONEYMAN (132) P. Nova Scotian Inst. vii, p. 265: n. sp.
- Ophiureæ*, defined, fossil representatives; ZITTEL (356) p. 169.
- †*Ophiurina* and *Ophiurina*, rediagnosed; GREGORY (111) p. 1036.
- †*Palæophiuridæ*, defined, and *Palæophiura*, rediagnosed; GREGORY (111) p. 1034.
- †*Palastropecten*, rediagnosed; GREGORY (111) p. 1038.
- Pectinura arenosa*, redescribed; DOEDERLEIN (68) p. 282, pl. xv.—*P. heros*; KOEHLER (169) Ann. Sci. nat. iv, p. 325.—*P. maculata*, New Zealand, colour in life; FARQUHAR (83) p. 190.—*P. rigida*; PFEFFER (267) p. 47.—*P. septemspinosa*, specimen with divided dorsal plates, relations to *P. rigida* and *P. armata* discussed; DOEDERLEIN (68) p. 282.
- P. conspicua*, nom. nud., size only given; KOEHLER (167) p. 168: Delta of the Godavery, 410 fms., allied to *P. heros*; KOEHLER (169) Ann. Sci. nat. iv, p. 322, pl. vii: n. sp.
- †*Protaster*, rediagnosed; GREGORY (111) p. 1031; JAMES (146) p. 137.—*P. daoulasensis* Davy, allied to *Furcaster*; GREGORY (111) p. 1038.—*P. decheni*, vide *Tremataster*. *P. ? granuliferus* & *P. miamiensis*; JAMES (146) p. 138.
- P. biforis*, Wenlock Shale, Castle Dinas, Bran, near Llangollen, Wales; GREGORY (111) P. Zool. Soc. London, 1896, pp. 1032 & 1033.—*P. gregarius*, *P. perarmatus*, and *P. scabrosus*, all Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Assoc. xiv, p. 377, no figg.: n. spp.
- †*Protasteridæ*, redefined; GREGORY (111) p. 1031.
- †*Protasterina*, *P. fimbriata*, & *P. flexuosa* (olim *Protaster*); JAMES (146) pp. 139, 140.
- †*Ptilonaster*, maintained but not diagnosed; GREGORY (111) p. 1036.
- †*Streptophiura*, redefined; GREGORY (111) p. 1036.
- †*Sturtzura*, n. g., with genotype *S.* (olim *Protaster*) *brisingoides* (Greg.), and including *Protaster leptosoma* Salter; GREGORY (111) P. Zool. Soc. London, 1896, p. 1034.
- †*Taniaster* & *T. elegans*; JAMES (146) pp. 138, 139.
- †*Taniura*, n. g., with genotype *T.* (olim *Taniaster*) *cylindricus* (E. Bill.); GREGORY (111) P. Zool. Soc. London, 1896, p. 1035. [*Taniura* preocc. Müller & Henle 1837, *Raiadum* genus.]
- †*Tremataster*, rediagnosed with genotype *T. difficilis*, and probably including *Protaster decheni*; GREGORY (111) p. 1037.

## (F.)—CRINOIDEA.

Defined (p. 462), classified (p. 468): Subcl. I *Palacrinida*, Ord. 1, *Cystodiata* (*Haplocrinida*, *Cocccrinida*, *Stephanocrinida*, *Pisocrinida*, *Hybocrinida*, *Porocrinida*, *Cupressocrinida*), 2, *Camerata* (*Retecrinida*, *Rhodocrinida*, *Glyptocrinida*, *Melocrinida*, *Actinocrinida*, *Platycrinida*, *Crotalocrinida*, *Barrandocrinida*, *Hexacrinida*, *Acrocrinida*, *Calyptrocrinida*), 3, *Flexilata* (*Taxocrinida*, *Ichthyocrinida*, *Uvulocrinida*, *Thaumatoocrinida*), 4, *Inadunata* (*Poteroocrinida*, *Cyathocrinida*, *Dendrocrinida*, *Decadocrinida*, *Astylocrinida*); Subcl. II, *Neocrinida*, Ord. 5, *Pelvicata* (*Encrinida*, *Apiocrinida*, *Eugeniocrinida*, *Holopida*, *Hyoocrinida*, *Platycrinida*, *Saccocomida*, *Marsupitida*), 6, *Canalicata* (*Bathycrinida*, *Rhizocrinida*, *Pentacrinida*, *Comatulida*, *Actinometrida*); HAECKEL (116).—History of name (pp. 12 et sqq.); classification, history of previous attempts (pp. 11–31); value of the group, the name *Pelmatozoa*, principles of division (pp. 144 et sqq.); *Crinoidea* divided into Order 1, *Inadunata*, Suborders *Larviformia* and *Fistulata*; 2, *Camerata*, Typical Section and Nontypical Section; 3, *Articulata*, suborders *Impinnata* and *Pinnata* (p. 169); WACHSMUTH & SPRINGER (336).

Family, generic, and specific characters in *Crin.* (p. 153); species, criteria of (p. 155); colour of fossil *Crin.* as a systematic character (p. 227); WACHSMUTH & SPRINGER (336).

*Crinoidea*, name supplants *Eucrinoidea* formerly used by Zittel, general account with special reference to fossils; divided into Orders, *Larviformia*, *Camarata*, *Fistulata*, *Flexibilia*, *Articulata*; ZITTEL (356) p. 113.—Classification of Wachsmuth and Springer (336) adopted in part; ZITTEL-EASTMAN (357) pp. 134–175.

Tabular synopsis of Mesozoic and Palæozoic genera; KOKEN (171) p. 277.

†*Crinoid* fragments *Incertæ sedis* from Cornwall; COLLINS (54) p. 82, pl. E.

*Acacocrinus*, subg. n., vide sub *Habrocrinus*.

†*Acrochordocrinus*,—A., cf. *amalthæi*, Bajocian, Caucasus; FOURNIER (85) p. 110.—[Vide etiam sub *Cyclocrinus*.]

†*Acrocrinida*, redefined, distribution of species; WACHSMUTH & SPRINGER (336) p. 803.

†*Acrocrinus*, rediagnosed (p. 505), arms (p. 86); *A. shumardi*, redescr., incl. *A. urnæformis* Hall (p. 806, pl. lxxx), *A. wortheni*, redescr. (p. 807, pl. lxxx); WACHSMUTH & SPRINGER (336).

*A. amphora*, St. Louis group, near Huntsville, Ala.; WACHSMUTH & SPRINGER (336) p. 808, pl. lxxx; n. sp.

†*Actinocrinida*, defined, includes *Briarocr.*, *Patelliocr.*, *Macrostylocr.*, *Carpocr.*, *Leptocr.*, *Desmidocr.*, *Periechocr.*, *Megistocr.*, *Agaricocr.*, *Actinocr.*, *Teleiocr.*, *Steganocr.*, *Physetocr.*, *Strotocr.*, *Eretmocr.*, *Amphoracr.*, *Batoocr.*, *Doryocr.*; ZITTEL (356) p. 128: arrangement follows Wachsmuth & Springer (336); ZITTEL-EASTMAN (357) p. 141: N. American spp. discussed, their geological history; MILLER & GURLEY (234) p. 73: defined, analysis and distribution of genera (p. 550), anals (p. 130), arm-structure (p. 85); WACHSMUTH & SPRINGER (336).

*Actinocrinoidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.

†*Actinocrinus*, rediagnosed and descr., much restricted, incl. *Blairocr.* S. A. Miller (p. 552), arms (p. 85), orals (p. 94), tegmen (p. 108), pores (p. 122); WACHSMUTH & SPRINGER (336).—*A. agilops* Hall, = *Teleiocr. umbrosus* (p. 628); *A. amplus* M. & W. = *Periechocr. whitei* (p. 530); *A. arrosus* (olim *Blairocr.*) S. A. Miller, redescr., incl. *B. bullatus* S. A. M. (p. 377, pl. IV); *A. asperimus*, redescr. (p. 575, pl. Ix); *A. blairi* S. A. Miller = *Cactocr. glans* (p. 625); *A. brevi-*

- cornis* Hall = *Megistocr. evansi* (p. 535); *A. caroli* Hall, possibly syn. of *Dizygocrinus unionensis* (p. 425); (?) *A. chouteauensis*, redescr. (p. 570, pl. xlv); *A. christyi* Hall non Shum. = *Periechocr. whitfieldi* (p. 522); *A. clivus* Hall = *Teleiocr. rudis* (p. 630); *A. dalyanus* S. A. Miller = *Cactocr. proboscidalis* (p. 601); *A. daphne*, redescr. (p. 574, pl. lvi); *A. decornis* Hall = *Dorycr. cornigerus* (p. 458); *A. delicatus* M. & W. = *Teleiocr. umbrosus* (p. 628); *A. divaricatus* Hall = *Dorycr. cornigerus* (p. 458); *A. (Calathocr.) erodus* Hall = *Teleiocr. rudis* (p. 630); *A. eryx* Hall = *Cactocr. glans* (p. 625); *A. excerptus* Hall = *Cactocr. proboscidalis* (p. 601); WACHSMUTH & SPRINGER (336). — *A. icosidactylus*, redescr., from La Varville; JULIEN (151) p. 135, pl. v. — *A. inflatus* Hall = *Amphoracr. spinobrachiatus* (p. 591); *A. infrequens* Hall = *Cactocr. thalia* (p. 604); *A. (Calathocr.) insculptus* Hall = *Teleiocr. rudis* (p. 630); *A. jugosus*, redescr. (p. 563, pl. liv); *A. lagena* Hall = *Cactocr. proboscidalis* (p. 601), *A. lobatus*, redescr., incl. ? *A. unicarinatus* Hall (p. 557, pls. lii, liv, lv); *A. locellus* Hall = *Cactocr. reticulatus* (p. 605); *A. lowei*, redescr., incl. *A. brontes* Hall (p. 562, pl. liv); *A. minor* Hall = *Megistocr. evansi* (p. 535); *A. multicornus* Lyon, syn. of *Centrocrinus pentaspinus* (p. 309); *A. multiradiatus*, tegmen (p. 109), redescr. (p. 555, pl. lii); *A. nodosus* S. A. Miller = *Cactocr. thalia* (p. 604); WACHSMUTH & SPRINGER (336). — *A. ovatus* Hall, vide *Cactocr. reticulatus*, var. *ovatus*. — *A. pendens* Hall = *Dorycr. unicornis* (p. 468); *A. penicillus* M. & W., an juvenis *Teleiocr. adolescens* (p. 635); *A. pernodosus*, redescr. (p. 561, pl. lv); *A. planobasilis* Hall = *Amphoracr. divergens* (p. 588); *A. puteatus* Rowley & Hare = *Cactocr. lucina* (p. 603); *A. quadrispinus* White = *Amphoracr. divergens* (p. 588); *A. quaternarius* Hall = *Cactocr. proboscidalis* (p. 601); *A. quinquangularis*, ridges on tegmen (p. 118); WACHSMUTH & SPRINGER (336). — *A. retarius*, made type of n. g. *Clematocrinus*; JAEKEL (144) p. 47. — *A. scitulus*, redescr., incl. *A. rusticus* Hall, *A. sillmani* M. & W., & *A. wachsmuthi* White (p. 559, pl. lv); *A. securus* Hall = *Cactocr. thetis* (p. 614); *A. stellaris*, tegmen (p. 109); *A. subumbrosus* Hall = *Teleiocr. liratus* (p. 633); *A. superlatus* Hall = *Megistocr. evansi* (p. 535); *A. symmetricus* Hall = *Aorocr. parvus* (p. 477); *A. tenuisculptus*, redescr., incl. *A. chloris* Hall (p. 571, pl. lv); *A. themis* Hall = *Cactocr. proboscidalis* (p. 601); *A. thoas* Hall = *Cactocr. reticulatus* (p. 605); *A. tholus* Hall = *Cactocr. glans* (p. 625); WACHSMUTH & SPRINGER (336). — *A. triacontadactylus*, redescr., from La Varville; JULIEN (151) p. 136, pl. v. — *A. trifugis* (olim *Blairocr.*) S. A. Miller, redescr. (p. 576, pl. liv); *A. trinodus* Hall = *Dorycr. unispinus* (p. 467); *A. urnaformis* McChesney = *Macrocr. konincki* (p. 447); *A. validus* M. & W. = *Steganocr. concinnus* (p. 582); *A. verrucosus*, redescr., incl. *A. asterias* McChesney (p. 558, pl. lii); WACHSMUTH & SPRINGER (336).
- A. *batheri*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig. — *A. bischoffi*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 8, pl. iii. — *A. gracilis*, Lower Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 572, pl. lvi. — *A. griffithi*, Upper part of Upper Burlington Limest., Burlington, Ia., and Pleasant Grove, Ia.; *op. cit.*, p. 568, pl. lii. — *A. jessiae*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 32, pl. ii. — *A. magnificus*, Keokuk group, Indian Creek, Montgomery Co., Ind., incl. *A. lobatus* Worthen non Hall; WACHSMUTH & SPRINGER (336) p. 567, pl. liii. — *A. multiramosus*, Keokuk group, Indian Creek, Montgomery Co., and Canton, Washington Co., Ind. (an incl. *A. grandis* S. A. Miller non Lyon); *op. cit.* p. 564, pls. liii, lv. — *A. pallubrum*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 26, pl. i.

- A. pettisenis*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 6, pl. i.—*A. porteri*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*A. sampsoni*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 5, pl. i.—*A. senectus*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 36, pl. ii.—*A. sobrinus*, Burlington Group, Burlington, Ia.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 10, pl. iii.—*A. spectabilis*, *ibid.*; *op. cit.* p. 9, pl. iii.—*A. subpulchellus*, *ibid.*; *op. cit.* p. 13, pl. iii.—*A. subscitulus*, *ibid.*; *op. cit.* p. 12, pl. iii.—*A. tuberculosus*, Upper Burlington Limest., Burlington and Pleasant Grove, Ia.; WACHSMUTH & SPRINGER (336) p. 573, pl. lii: n spp.
- Actinoidea* C. F. Roem.; WACHSMUTH & SPRINGER (336) p. 16.
- Actinometra pulchella*, in B. of Biscay, variation in position of 1st syzygy, and of others; KOEHLER (163) p. 477, & (164) p. 99.
- †*Adelocrinus hystrix*; WHIDBORNE (342) p. 377.
- †*Agaricocrinus*, rediagnosed (p. 486), radial dome plates (p. 104); WACHSMUTH & SPRINGER (336): geological history of N. American spp.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 9.—*A. americanus*, with var. *tuberosus*, redescri., incl. *A. dissimilis* S. A. Miller (p. 488, pls. xl, xlii); *A. bellatrema* (= *ornatrema*), redescri. (p. 506, pl. xli), var. nov. *major*, Upper Burlington Limest., Burlington and Pleasant Grove, Ia. (p. 507, pl. xli); *A. brevis*, redescri., incl. *A. corniculus* Hall (p. 511, pl. xxxviii); *A. bullatus*, redescri., incl. *A. pentagonus* Hall (p. 493, pl. xli); *A. convexus*, redescri., distinct from *A. pentagonus* (p. 508, pl. xxxviii); *A. coreyi*, redescri., incl. *A. springeri* White (p. 510, pl. xxxix); *A. crassus*, redescri. (p. 499, pls. xxxix & xl); *A. elegans*, redescri. (p. 500, pl. xl); *A. excavatus*, redescri. (p. 491, pl. xxxix); *A. fascellus*, redescri. (p. 512, pl. xxxviii); *A. gracilis*, redescri. (p. 513, pl. xli); *A. inflatus*, redescri. (p. 502, pl. xli); *A. nodosus*, redescri. (p. 493, pl. xliii); *A. nodulosus*, with var. *macadamsi*, redescri. (p. 497, pls. xxxix, xl, xliii); *A. planoconvexus*, redescri., incl. *A. decornis* Rowley & Hare, et *A. blairi* S. A. Miller (p. 503, pl. xxxviii); *A. pyramidatus*, redescri., incl. *A. corrugatus* Hall (p. 512, pl. xxxviii); *A. sampsoni*, redescri., incl. *A. germanus* et *A. chouteauensis* S. A. Miller (p. 505, pl. xlv); *A. splendens*, redescri., incl. *A. indianensis* et *A. gorbyi* S. A. Miller (p. 495, pl. xl); *A. stellatus*, redescri., incl. *A. geometricus* Hall (p. 508, pl. xxxviii); *A. whitfieldi*, redescri. (p. 496, pls. xlii & xliii); *A. wortheni*, redescri. (p. 490, pls. xxxix & xl); WACHSMUTH & SPRINGER (336).
- A. adamsensis*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 24, pl. i.—*A. conicus*, Keokuk group, Indian creek, Montgomery Co., Ind., 3 arms with cysts of ? *Myzostoma*; WACHSMUTH & SPRINGER (336) p. 501, pl. xxxix.—*A. hodgsoni*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 23, pl. i.—*A. illinoisensis*, *ibid.*; *op. cit.* p. 25, pl. i.—*A. iowensis*, Keokuk group, Keokuk, Ia.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 5, pl. i.—*A. keokukensis*, *ibid.*; *op. cit.* p. 7, pl. i: n spp.
- †*Agassiocrinida*, defined; ZITTEL-EASTMAN (357) p. 162.
- †*Agassiocrinus*, chambered organ (p. 45), base (p. 59); WACHSMUTH & SPRINGER (336).
- A. ovalis*, Kaskaskia Group, Randolph Co., Ill.; MILLER & GURLEY (233), Bull. Illinois Mus. ix, p. 36, pl. ii: n sp.
- †*Agriocrinus*, discussed, syn. of *Hapalocrinus*, q. v.; BATHER (30) p. 343.
- †*Allageocrinida*, defined, includes only *Allageocrinus*; ZITTEL-EASTMAN (357) p. 135.
- †*Allageocrinus*, arm-branching (p. 78), muscle-plates (p. 87), orals (pp. 89, 92); WACHSMUTH & SPRINGER (336).

- +*Allionia* Michelotti, is syn. of *Antedon*; LORIOLO (194) p. 123.
- +*Alloocrinus*, rediagnosed (p. 306); *A. benedicti*, redescrip. (p. 308, pl. xxiv), *A. typus*, redescrip. (p. 307, pl. xxiv); WACHSMUTH & SPRINGER (336).
- +*Alloprosalloocrinus*, rediagnosed (p. 406); *A. cornicus*, redescrip. (p. 407, pl. xlii); *A. depressus*, probably an *Agaricocrinus* (p. 407); WACHSMUTH & SPRINGER (336).
- +*Amblacrinus*; BATHER (30) p. 341.
- +*Amphoracrinus*, rediagnosed & described (p. 586), arms (p. 85); WACHSMUTH & SPRINGER (336).—*A. americanus*, Quenst. Handb. Petref. actenk., Aufl. 3, pl. lxxvii, f. 7, non Roemer = *Agaricocr. wortheni* Hall (p. 488); *A. divergens*, redescrip., incl. *Actinocr. planobasilis* Hall, *A. quadrispinus* White, and var. *multiramosus* M. & W. (p. 588, pl. lxii); *A. spinobrachiatus*, redescrip., incl. *Actinocr. inflatus* Hall (p. 591, pl. lxii); *A. viminalis*, redescrip. (p. 590, pl. liv); WACHSMUTH & SPRINGER (336).
- A. blairi*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 26, pl. i.—*A. jessiae*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 21, pl. iii.—*A. sampsoni*, *ibid.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 27, pl. i: n. spp.
- +*Ancyrocrinus*, what it is; WACHSMUTH & SPRINGER (336) p. 50.
- +*Anisocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 77.
- +*Anomalocrinidae*, defined; ZITTEL-EASTMAN (357) p. 152.
- +*Anomalocrinus*, stem (p. 40), base (p. 57), compound radials (pp. 71, 158), arm-branching (p. 78), tegmen (p. 116), anals (p. 127); WACHSMUTH & SPRINGER (336).
- +*Anthemocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) pp. 77.
- Antedon*, base (pp. 64, 68), development of arms (p. 82), orals (p. 99), anal (p. 139); WACHSMUTH & SPRINGER (336).—*A. bifida*, locomotion; BATHER (26) p. 301, & (29) p. 664: vide etiam *A. rosacea*.—+*A. brownii*, and +*A. ransomei*; BELL (33) p. 6.—+*A. rhodanicus*, incl. *A. speciosus* Pomel, redescrip. with variations in centrodorsal, Upper Burdigalian, compared with *A. lenticularis*; LORIOLO (194) p. 121, pl. iv.—*A. rosacea*; MARCHISIO (216) p. 1: vide etiam *A. bifida*.—+*A. woodwardi*; BELL (33) p. 6.—*A. sp.*, 75 fathoms, La Have Banks; HONEYMAN (131) p. 253.—+*A. sp.*; KILIAN (157) p. 721.
- +*A. allardi*, Upper Burdigalian, Les Angles, near Avignon, compared with *A. globosus*; LORIOLO (194) Bull. Soc. geol. France (3), xxv, p. 126, pl. iv.—+*A. anglesensis*, *ibid.*; *tom. cit.* p. 121, pl. iv.—+*A. depereti*, *ibid.*, compared with *Allionia oblita*, *Antedon lineatus*, *A. cartennensis*, and *A. solutus*; *op. cit.* p. 125, pl. iv.—*A. flava*, B. of Biscay, 1410 m., 6° 21' W., 45° 57' N., belongs to *granulifera* group; KOEHLER (163) Rev. biol. Nord France, vii, p. 475, & (164) Ann. Univ. Lyon, xxvi, p. 97, figg. 20 & 21.—+*A. fontanesi*, Upper Burdigalian, Les Angles, near Avignon, compared with *A. meneghianus*; LORIOLO (194) Bull. Soc. geol. France (3), xxv, p. 126, pl. iv.—*A. morea*, 570 fms., 44° 38' N., 54° 6' W., Grand Bank, N. Atlantic; HONEYMAN (132) P. Nova Scotian Inst. vii, p. 265.—+*A. pellati*, Upper Burdigalian, Les Angles, near Avignon; LORIOLO (194) Bull. Soc. geol. France (3), xxv, p. 126, pl. iv: n. spp.
- +*Aorocrinus*, n. g. with genotype *A. immaturus* [syn. ac *Calocrinus*]; WACHSMUTH & SPRINGER (336) p. 470.—*A. canaliculatus* (olim *Dorycr.*) M. & W., redescrip. (p. 475, pl. xlv); *A. cassedayi* (olim *Actinocr. et Gennæocr.*) Lyon, redescrip., incl. ? *Actinocr. carliculus* et *A. calypso* Hall (p. 483, pl. xlii); *A. concavus* (olim *Actinocr.*, *Amphoracr.*, *Calocr.* [Typ.] et *Dorycr.*) M. & W., redescrip. (p. 482, pl. xlii); *A. elegans* (olim *Dorycr.*) S. A. Miller, redescrip. (p. 480, pl. xxxiv); *A. helios* (olim *Actinocr. et Agaricocr.*) Hall, redescrip., incl. var. *eris* Hall

- (p. 481, pl. xlv); *A. immaturus* (olim *Dorycr.*) W. & Sp., redescr. (p. 471), *A. parvibasis* (olim *Dorycr.*) W. & Sp., redescr. (p. 473, pl. xlv); *A. parvus* (olim *Actinocr.* et *Dorycr.*) Shum., redescr., incl. *A. symmetricus* Hall, et *D. amoenus* S. A. Miller (p. 477, pl. xlv); *A. radiatus* (olim *Dorycr.*) W. & Sp., redescr. (p. 472, pl. xlv); *A. spinosulus* (olim *Actinocr.* et *Dorycr.*) Hall, redescr., incl. *D. kelloggi* Worthen (p. 478, pl. xliii); *A. subaculeatus* (olim *Actinocr.* et *Dorycr.*) Hall, redescr. (p. 476, pl. xlv); WACHSMUTH & SPRINGER (336).
- Apiocrinidae*, defined, includes *Apiocr.*, *Guettardocr.*, *Millericr.*, *Acrochordocr.*, *Calamocr.*; ZITTEL (356) p. 140; ZITTEL-EASTMAN (357) p. 167.
- †*Apiocrinus*, base (pp. 60 & 61), tegmen (p. 117); WACHSMUTH & SPRINGER (336).—*A. meriani*, Tithonian, Bas-Languedoc; ROMAN (281) pp. 88, 331.—*A. milleri*; SCHLUETER (298) p. 496.—*A. polycyphus*!; HUG (133) p. 404.
- A. recubariensis*, Muschelkalk, Recoaro; CREMA (59) Atti Ist. Veneto, liv, p. 858, pl. ii: is a primitive *Millericrinus*; BATHER (27): n. sp.
- †*Archæocrinus*, rediagnosed (p. 253); *A. desideratus*, redescr. (p. 257, pl. x); *A. lacunosus*, redescr. (p. 255, pl. x); *A. microbasalis*, redescr. (p. 256, pl. x); *A. marginatus* Bill., sp. referred back to *Glyptocrinus* (p. 254); *A. pyriformis* [errore pro *piriformis*], redescr. (p. 255, pl. x); WACHSMUTH & SPRINGER (336).
- †*Aristocrinus*, validity of genus doubted; BATHER (24) p. 998.
- †*Arthracantha*, rediagnosed, incl. *Hystericrinus* Hinde, validity of name and value of spines discussed; WACHSMUTH & SPRINGER (336) p. 747.—*A. ithacensis*; KINDLE (161) p. 33: redescr.; WACHSMUTH & SPRINGER (336) p. 749, pl. lxxvi.—*A. punctobrachiata*, redescr., incl. *Hystericrinus carpenteri* Hinde; *op. cit.* p. 750, pl. lxxvi.
- A. depressa*, Lower Chemung group, Steuben Co., N.Y.; WACHSMUTH & SPRINGER (336) p. 751, pl. lxxvi: n. sp.
- Articulata* (= *Neocrinoidea*, P. H. Carp., *Canaliculata*, W. & Sp., *Pentacrinacea*, Neum.), defined, includes families *Encrinidae*, *Apiocrinidae*, *Bourgueticrinidae*, *Eugeniacrinidae*, *Holopidae*, *Plicatocrinidae*, *Saccocomidae*, *Pentacrinidae*, *Comatulidae*; ZITTEL (356) p. 139; ZITTEL-EASTMAN (357) p. 165: sensu Joh. Müller (p. 15), sensu J. S. Miller (p. 13), sensu W. & Sp. (p. 26), redefined (pp. 149, 151), sensu Zittel (pp. 23 & 24); WACHSMUTH & SPRINGER (336).
- Articulosa*, nom. nov. pro *Articulata* sensu W. & Sp. non Müll.; WACHSMUTH & SPRINGER (336) p. 153.
- †*Ascocrinus* vel *Ascocystis*, vide sub IV g.
- †*Astrocrinus* Conrad, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 292.
- Astylida* C. F. Roem.; WACHSMUTH & SPRINGER (336) p. 16.
- †*Atelestocrinus*, arm-branching (p. 77), asymmetry (p. 159); WACHSMUTH & SPRINGER (336).
- †*Aulocrinus*, n. g. with genotype *A. agassisi*, Keokuk group, Indiana, with branching anal tube; WACHSMUTH & SPRINGER (336) p. 138, pl. vii, fig. 9: n. sp.
- †*Austinocrinus* spp.; STOLLEY (320) pp. 247, 272.
- †*Baerocrinus*, compound radials; WACHSMUTH & SPRINGER (336) pp. 72, 158.
- †*Balanocrinus subteres*, Callovian (p. 55), Oxfordian (pp. 60, 65), Bas-Languedoc; ROMAN (281).
- †*Barrandocrinidae*, defined, includes only *Barrandocr.*; ZITTEL (356) p. 129, and ZITTEL-EASTMAN (357) p. 144.
- †*Barrandocrinus*, rediagnosed and described from type-specimens of *B. sceptrum*, referred to *Batocrinidae* (p. 484, pl. viii), arms (p. 86); WACHSMUTH & SPRINGER (336).

- +*Barycrinus*, stem (pp. 40, 45 & 46), armlets (p. 82); WACHSMUTH & SPRINGER (336).
- B. elrodi*, St Louis Group, Spergen Hill, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 38, pl. ii.—*B. neglectus*, Keokuk Group, Crawfordsville, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 28, pl. ii.—*B. samponi*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 81, pl. iv : n. spp.
- Bathycrinus*, stem (p. 40), base (p. 63); WACHSMUTH & SPRINGER (336).
- +*Batocrinida*, defined, analysis and distribution of genera, divided into *Batocrinites* and *Periechocrinites* (p. 361), arms (p. 86), anals (p. 130); WACHSMUTH & SPRINGER (336).
- +*Batocrinites*, defined; WACHSMUTH & SPRINGER (336) pp. 361, 366.
- Batocrinus*, rediagnosed and discussed (pp. 364, 366), arm-branching (p. 77), tegmen (p. 109), pores (p. 122); WACHSMUTH & SPRINGER (336): N. Amer. spp. discussed, family *Batocrinida* not admitted; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 21.—*B. æqualis*, redescr., incl. *B. doris*, Hall; WACHSMUTH & SPRINGER (336) p. 371, pl. xxviii.—*B. argutus*, variation from type; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 66.—*B. boonvillensis* S. A. Miller = *Dizygocr. originarius*, var. *adultus* (p. 423); *B. bulbosus* Rowley & Hare = *Lobocr. inflatus* (p. 444); *B. calvini*, redescr., approaches *Dizygocr.* (p. 373, pl. xlv); *B. cantonensis*, redescr. (p. 383, pl. xxvii); *B. cassedayanus* M. & W. = *Lobocr. longirostris* (p. 442); *B. clypeatus*, redescr., incl. *B. inornatus* and *B. papillatus* Hall, and *B. comparilis* S. A. Miller (p. 380, pl. xxvii); *B. davisii* Rowley & Hare = *Dizygocr. unionensis* (p. 424); *B. grandis*, cirri (p. 443), redescr., incl. *Actinocr. wachsmuthi* White (p. 381, pl. xxvii); WACHSMUTH & SPRINGER (336).—*B. gurleyi* S. A. Miller, see *Dizygocr.*: Rowley & Hare, see *D. montgomeryensis*.—*B. irregularis*, redescr. (p. 369, pl. xxvii); *B. icosiductylus*, redescr. (p. 368, pl. xxvii); *B. laura*, abnormal formation of anal tube (p. 136, pl. iv), with var. *sinuosus*, redescr., incl. *B. scyphus* Miller & Gurley (p. 384, pl. xxix); *B. lepidus*, redescr. (p. 372, pl. xxviii); *B. longirostris*, abnormal formation of anal tube (p. 135); *B. lyonanus* Miller & Gurley, syn. of *Dizygocr. biturbatus* (p. 427); *B. macbridei*, redescr. (p. 376, pl. xxx); WACHSMUTH & SPRINGER (336).—*B. marinus* Miller & Gurley, vide *Lobocr. spiniferus*.—*B. mediocris* S. A. Miller, syn. of *Dizygocr. originarius*, var. *adultus* (p. 423); *B. mundulus*, redescr., incl. *B. similis* Hall (p. 382, pl. xxx); *B. pistillus*, redescr. (p. 378, pl. xxxi); *B. poculum*, redescr. (p. 378, pl. xxx); *B. pulchellus* S. A. Miller, syn. of *Dizygocr. unionensis* (p. 424); *B. quasillus*, redescr. (p. 372, pl. xxviii); *B. rotadentatus*, redescr., transition to *Lobocr.* and *Eretmocr.* (p. 374, pl. xlv); *B. spergenensis* S. A. Miller, syn. of *Dizygocr. whitei* (p. 419); *B. subæqualis*, tube bursting forth above basals (p. 136), redescr., incl. *B. discoideus* Hall and *B. formosus* M. & W. (p. 369, pl. xxviii); *B. subconicus* Worthen, syn. of *Dizygocr. euconus* (p. 430); *B. turbatus* with var. *elegans*, redescr., incl. *B. lætus* Miller & Gurley (p. 375, pl. xxvii); *B. venustus* S. A. Miller, syn. of *Dizygocr. euconus* var. *abscissus* (p. 431); WACHSMUTH & SPRINGER (336).
- B. adamsensis*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 14, pl. i.—*B. affinis*, Burlington Group, Sagetown, Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 55, pl. iv.—*B. albersi*, Burlington Group, Burlington, Iowa, *op. cit.* p. 38, pl. ii.—*B. approximatus*, *ibid.*; *op. cit.* p. 56, pl. iv.—*B. argutus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 9, pl. i.—*B. asper*, *ibid.*; *op. cit.* p. 13, pl. i.—*B. asperatus*, Burlington Group, Adams Co., Ill.; *op. cit.* p. 12, pl. i.—*B. basilicus*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 11, pl. i.—*B. cistula*, St.

Louis Group, Lanesville, Ind.; *op. cit.* p. 18, pl. i.—*B. cognatus*, Burlington Group, Burlington, Iowa, with abnormal specimen (p. 66); MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 60, pl. iv.—*B. complanatus* [sic], *ibid.*; *op. cit.* p. 27, pl. i.—*B. consanguineus*, *ibid.*, with abnormal specimen perhaps of this species; *op. cit.* p. 63, pl. iv.—*B. delicatulus*, Keokuk Group, Boonville, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 12, pl. i.—*B. douglassi*, Keokuk Group (?), Bridger Mountains, near Bozeman, Montana; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 29, pl. ii.—*B. enodatus*, Burlington Group, Sagetown, Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 46, pl. ii.—*B. enodia*, Burlington Group, Burlington, Iowa; *op. cit.* p. 25, pl. i.—*B. faberi*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 18, pl. ii.—*B. folliculus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 15, pl. i.—*B. germanus*, *ibid.*; *op. cit.* p. 5, pl. i.—*B. glaber*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 32, pl. i.—*B. hodgsoni*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 8, pl. i.—*B. insolens*, Burlington Group, Burlington, Iowa, MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 35, pl. ii.—*B. jessiae*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 20, pl. i.—*B. levigatus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 29, pl. i.—*B. levis*, *ibid.*; *op. cit.* p. 23, pl. i.—*B. modulus*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 16, pl. i.—*B. nanus*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 17, pl. i.—*B. niteus* [? err. pro *nitens*], Burlington Group, Burlington, Iowa; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 15, pl. i.—*B. nodosarius*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 22, pl. i.—*B. nodosus*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 5, pl. i.—*B. nodulosus*, *ibid.*; *op. cit.* p. 6, pl. i.—*B. parilis*, Keokuk Group, Boonville, Mo.; *op. cit.* p. 17, pl. ii.—*B. pettisensis*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 19, pl. ii.—*B. politus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 31, pl. i.—*B. proximus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 7, pl. i.—*B. regalis*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 14, pl. i.—*B. reliquus*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 22, pl. i.—*B. remotus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 43, pl. ii.—*B. repertus*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 70, pl. iv.—*B. repositus*, Burlington Group, Burlington, Iowa; *op. cit.* p. 45, pl. ii.—*B. reservatus*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 25, pl. i.—*B. rotuliformis*, *ibid.*; *op. cit.* p. 26, pl. i.—*B. rudis*, Keokuk Group, Little Barren R., Ky.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 52, pl. iv.—*B. rusticellus*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 23, pl. i.—*B. (?) rusticus*, *ibid.*; *op. cit.* p. 28, pl. ii.—*B. saccellus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 40, pl. ii.—*B. sagetownensis*, Burlington Group, Sagetown, Ill.; *op. cit.* p. 54, pl. iv.—*B. salemensis*, Warsaw Group, Salem, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 8, pl. i.—*B. scitulus*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 19, pl. i.—*B. sedatiensis*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 71, pl. iv.—*B. selectus*, Burlington Group, Sagetown, Illinois; *op. cit.* p. 37, pl. ii.—*B. senex*, Burlington



- Group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 21, pl. i.—*B. sharonensis*, *ibid.*; *op. cit.* p. 18, pl. i.—*B. signatus*, Keokuk Group, Keokuk, Iowa; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 10, pl. i.—*B. solitarius*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 22, pl. ii.—*B. speciosus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 47, pl. ii.—*B. spurius*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 20, pl. ii.—*B. stelliformis* [sic], Keokuk Group, Boonville, Mo.; *op. cit.* p. 9, pl. i.—*B. strenuus*, *ibid.*; *op. cit.* p. 11, pl. i.—*B. subaequatus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 72, pl. iv.—*B. sublevis*, Burlington Group, Sagetown, Ill.; *op. cit.* p. 41, pl. ii.—*B. subovatus*, Burlington Group, Burlington, Iowa; *op. cit.* p. 50, pl. ii.—*B. subrotundus*, *ibid.*; *op. cit.* p. 48, pl. ii.—*B. subacutulus*, Burlington Group, Sedalia, Mo., *op. cit.* p. 51, pl. iii.—*B. tuberculatus*, Lower Burlington, Burlington, Iowa; WACHSMUTH & SPRINGER (336) p. 380, pl. xxvii.—*B. variabilis*, Burlington Group, Iowa, Mo. and Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 58, pl. iv: n. spp.
- †*Belemnocrinidae*, defined; ZITTEL-EASTMAN (357) p. 153.
- †*Belemnocrinus*, base (p. 57), armlets (p. 82); WACHSMUTH & SPRINGER (336).—*B. florifer*, cirri (p. 44); *B. typus*, arm-branching (p. 75), cirri (p. 44); WACHSMUTH & SPRINGER (336).
- †*Blairocrinus* S. A. Miller = *Actinocr.* (p. 555); *B. bullatus*, S. A. Miller = *Actinocr. arrosus* (p. 577); WACHSMUTH & SPRINGER (336).
- †*Botryocrinus*, has armlets not pinnules (pp. 82, 160), anals (p. 127); WACHSMUTH & SPRINGER (336).—*B. decadactylus*, restored figure; BATHER (28) p. 99.
- Bourgueticrinidae*, defined, includes *Bourgueticr.*, *Rhizocr.*, *Mesocr.*, *Bathycr.*; ZITTEL (356) p. 141: not the last two; ZITTEL-EASTMAN (357) p. 169.
- †*Bourgueticrinus*, joint-surfaces of stem; WACHSMUTH & SPRINGER (336) p. 48.—*B. ellipticus*; HUME (134) p. 568: conglomerats des Gas, columnals figured; LORY & SAYN (197) pp. 13, 27.—*B.*, sp., Senonian, Caucasus; FOURNIER (85) p. 159.
- B.*, sp. n.; STOLLEY (319) Arch. Anthropol. Geol. Schleswig, i, p. 147.
- †*Cacabocrinus*, syn. of *Dolatocrinus*; WACHSMUTH & SPRINGER (336) p. 311.—*C. troosti*, cirri; JAEKEL (144) p. 48.
- †*Cactocrinus*, n. g., with genotype *C. proboscidalis* (p. 600), arms (p. 85), food-grooves (p. 101); WACHSMUTH & SPRINGER (336).—*C. arnoldi* (olim *Actinocr.*) W. & Sp., redescrip. (p. 624, pl. lvii); *C. clarus* (olim *Actinocr.*) Hall, redescrip. (p. 612, pls. lvii & lviii); *C. caelatus* [err. pro *caelatus*] (olim *Actinocr.*) Hall (p. 618, pl. lix), var. *spinotentaculus* (p. 619, pl. lix), redescrip.; *C. ectypus* (olim *Strotocr.* et *Actinocr.*) M. & W., redescrip. (p. 611, pl. lvi); *C. fossatus* (olim *Actinocr.*) S. A. Miller, redescrip. (p. 620, pl. lv); *C. glans* (olim *Actinocr.*) Hall, redescrip., incl. *A. tholus* et *A. eryx* Hall, et *A. blairi* S. A. Miller (p. 625, pl. liv), ambulacra (p. 102, pl. iv); *C. limabrachiatus* (olim *Actinocr.*) Hall, redescrip. (p. 608, pl. lviii); *C. longus* (olim *Actinocr.*) M. & W., redescrip. (p. 609, pl. lvii); *C. lucina* (olim *Actinocr.*) Hall, redescrip., incl. *A. puteatus* Rowley & Hare (p. 663, pl. lvi); *C. multibrachiatus* (olim *Actinocr.*) Hall, redescrip., incl. var. *echinatus* (p. 617, pls. lvi, lviii); *C. nodobrachiatus* (olim *Actinocr.*) W. & Sp., redescrip. (p. 622, pl. lvii); *C. opusculus* (olim *Actinocr.*) Hall, redescrip. (p. 607, pl. lvi); *C. ornatissimus* (olim *Actinocr.*) W. & Sp., redescrip. (p. 621, pl. lvii); *C. proboscidalis* (olim *Actinocr.*) Hall, redescrip., incl. *A. quaternarius*, *A. excerptus*, *A. themis*, et *A. lagena*, Hall, et *A. dalyanus* S. A. Miller (p. 601, pl. lviii), ambulacra (p. 102, pl. v), tegmen (p. 107); *C. reticulatus* (olim *Actinocr.*) Hall, redescrip., incl. *A. thos* et *A. locellus*, Hall (p. 605, pl. lviii), var. *ovatus* (p. 606, pl. lvii); *C. sesarmatus* (olim

- Actinocr.*) Hall, redescr. (p. 615, pl. lv); *C. thalia* (olim *Actinocr.*), redescr., incl. *A. infrequens* Hall, et *A. nodosus* S. A. Miller (p. 604, pls. lvi & lvii); *C. thetis* (olim *Actinocr.*) Hall, redescr., incl. *A. securus* Hall (p. 614, pl. lvi); WACHSMUTH & SPRINGER (336).
- C. denticulatus*, Lower Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 606, pl. lvii.—*C. extensus*, *ibid.*, incl. *Actinocr. sexarmatus* (pars) Hall; *op. cit.* p. 616, pl. lvii.—*C. obesus* (quoted as Keyes MS), Lower Burlington Limest., Hannibal, Mo.; *op. cit.* p. 613, pl. lv: n. spp.
- Calamocrinus*, proximale (p. 40), root (p. 51), arm-branching (p. 78), orals (p. 99); WACHSMUTH & SPRINGER (336).
- +*Calceocrinidae*, definitions after Bather; ZITTEL-EASTMAN (357) p. 154: syzygies, armlets (p. 82), systematic position (pp. 157 & 158); WACHSMUTH & SPRINGER (336).
- +*Calceocrinus*, compound RR; WACHSMUTH & SPRINGER (336) p. 72.
- +*Callicrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 353: vide etiam sub *Cryptodiscus*.—*C. acanthinus*, redescr. (p. 356, pl. lxxxiii); *C. beachleri*, redescr. (p. 355, pl. lxxxiii); *C. cornutus*, redescr., incl. var. *excavatus* Hall (p. 357, pl. lxxxiii); (?) *C. ramifer* (olim *Eucalyptocrinus*) Roemer, redescr. (p. 358); WACHSMUTH & SPRINGER (336).
- +*Calpiocrinus*, base (pp. 52, 58), arm-branching (p. 77); WACHSMUTH & SPRINGER (336).
- +*Calyptrocrinidae*, stem (p. 43), defined, analysis and distribution of genera (p. 330); WACHSMUTH & SPRINGER (336): defined, incl. *Callior.*, *Eucalyptocr.*, *Hypanthocr.*; ZITTEL (356), p. 133, & ZITTEL-EASTMAN (357) p. 148.
- +*Camarocystida* = *Lobolites*, regarded as brood-pouches or parasite-cysts of crinoid stems; HAECKEL (118) p. 168.
- Camerata* W. & Sp. (p. 26), redefined (pp. 149, 151), geol. history and classification (p. 162), analysis of families (p. 170), geol. and geogr. distrib. (pp. 171 & 172); WACHSMUTH & SPRINGER (336): (= *Sphaeroidocrinacea* Neumayr) defined, incl. famm. *Gasterocornida*, *Platycrinida*, *Hexacerinida*, *Actinocrinida*, *Barrandeocrinida*, *Glyptocrinida*, *Rhodocrinida*, *Melocrinida*, *Polypeltida*, *Calyptrocrinida*, *Crotalocrinida*; ZITTEL (356) p. 126: classification of WACHSMUTH & SPRINGER (336) given, and partly followed; ZITTEL-EASTMAN (357) p. 138.
- +*Campocrinus*, n. subg. of *Dichocrinus*, with genotype *C. myelodactylus*, Keokuk group, Indian creek, Montgomery Co., Ind. (p. 779, pl. lxxv); *C. cirrifer*, Kaskaskia group, near Sloans Valley, Pulaski Co., Ky. (p. 780, pl. lxxvi); the cirri of the two species (p. 44); WACHSMUTH & SPRINGER (336): n. spp.
- Canaliculata* Chapman; WACHSMUTH & SPRINGER (336) p. 30.
- +*Canis[r]ocrinus*; JAMES (146): rejected, *C. richardsoni* is *Glyptocrinus*, *C. pattersoni* is indet.; WACHSMUTH & SPRINGER (336) p. 174.
- +*Carabocrinus*, tegmen (pp. 137, 162), anals (p. 127), anus (p. 137); WACHSMUTH & SPRINGER (336).
- +*Castanocrinus* Roemer, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 293.
- +*Catilloocrinidae*, arms (p. 82), systematic position (pp. 157 & 158); WACHSMUTH & SPRINGER (336): defined (p. 153) ZITTEL-EASTMAN (357).
- +*Catillocrinus*, chambered organ (p. 45), compound RR (p. 72), axial canals (p. 142); WACHSMUTH & SPRINGER (336).
- +*Centrocrinus* W. & Sp. 1881, non Austin 1843, nec Worthen [nomen mutandum est], rediagnosed (p. 308), *C. pentaspinus*, redescr., incl. *C. multicornus* (p. 309, pl. xxv); WACHSMUTH & SPRINGER (336).
- +*Cerocrinus*, anals; WACHSMUTH & SPRINGER (336) p. 133.—*C. greppini* Oppel, made syn. of *Millericrinus milleri*; HUG (133) p. 405.

- + "*Cheirocrinus*" *clarus*, end of stem, terminal plate; WACHSMUTH & SPRINGER (336) p. 51.
- Oionacineti* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- Cladoidea*, coil of gut inferred from the bulla; JAEKEL (142) p. 31.
- Clematocrinus*, n. g., with genotype *Actinocrinus retarius* Phillips; JAEKEL (144) p. 47.
- Clonocrinus* Oehlert non Quenst., syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.
- Coadunata* J. S. Miller; WACHSMUTH & SPRINGER (336) p. 13.
- + *Coccorinidae*, defined, incl. *Cococr.* and *Allagecr.*; ZITTEL (356) p. 124.
- + *Coccorinus*; FRECH (88) p. 177: systematic position discussed; BATHER (30) p. 341: rediagnosed (p. 738), orals (pp. 90, 94, pl. iii); *C. bacca*, redescr. (p. 739, pl. lxxv); *C. rosaceus*, arms and tegmen (p. 739, pl. iii); WACHSMUTH & SPRINGER (336).
- + *Codiocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 77: systematic position; OEHLERT (250) p. 829.—*C. granulatus*, redescr., from Sta. Lucia, Spain; OEHLERT (250) p. 827.
- Columnida* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- Comatulidae*, defined, includes *Antedon*, *Endiocr.*, *Actinometra*, *Atelecr.*, *Promachocr.*, *Thaumatocr.*, *Thiolliericr.*; ZITTEL (356) p. 145, and ZITTEL-EASTMAN (357) p. 174.
- + *Compsocrinus*, rediagnosed (p. 516), arms (p. 80); *C. harrisi*, redescr. (p. 517, pl. xxi), *C. miamiensis* (olim *Glyptocr.*) S. A. Miller, redescr. (p. 518, pl. xxi); WACHSMUTH & SPRINGER (336).
- + *Conocrinus* (*Rhizocrinus*) *piriformis*; POPOVICI-HATZEG (270) p. 249.
- + *Cordylocrinus*, rediagnosed (p. 735), arms (p. 79); WACHSMUTH & SPRINGER (336): systematic position discussed; BATHER (30) p. 341.—*C. plumosus* (olim *Platycrinus*), redescr., incl. *Platycr.* vel. *Cordylocr. parvus* Hall (p. 737, pl. lxxv); (?) *C. ramulosus* (olim *Platycr.*) Hall, redescr. (p. 737); WACHSMUTH & SPRINGER (336).
- Costata* Joh. Müller (p. 15), Zittel (p. 23); WACHSMUTH & SPRINGER (336).
- + *Cotyledonocrinus* Cass & Ly., = *Dichocr.*; WACHSMUTH & SPRINGER (336) pp. 753 & 754.
- + *Cromyocrinus*, arms; WACHSMUTH & SPRINGER (336) p. 80.
- + *Crotalocrinidae*, systematic position; WACHSMUTH & SPRINGER (336) p. 164: defined, includes *Crotalocr.* & *Enallocr.*, referred to *Camerata*; ZITTEL (356) p. 133, and ZITTEL-EASTMAN (357) p. 149.
- + *Crotalocrinus*, allied to *Giasocrinus*; JAEKEL (144) p. 47: joint-surfaces (p. 81), stem-lumen (p. 46); *C. pulcher*, arm-branching (p. 75); WACHSMUTH & SPRINGER (336).
- + *Cryptodiscus*, referred to *Medusae*, and following n. spp. described and figured from Niagara Limest., Joliet, Illinois, *C. bilobus* (p. 749), *C. corrugatus* (p. 747), *C. digitatus* (p. 749), *C. hydei* (p. 748), but in added footnote (p. 744) *Cryptodiscus* is regarded as summit-plates of anal tube of *Callicrinus*; WELLER (339) J. Geol. v: redescr. as summit of anal tube of *Callicrinus*, on evidence of specimens from Niagara Limest., Racine, Wis.; WELLER (340).
- + *Ctenocrinus*, discussed and made syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.—*C. typus*; FRECH (88) p. 177.
- + *Culicocrinus*, systematic position; BATHER (30) p. 344: arms (p. 79), orals (p. 90); *C.*, sp., Niagara group, Maquoketa, Ia. (p. 735, pl. lxxv); WACHSMUTH & SPRINGER (336).
- + *Cupressocrinidae*, defined, includes only *Cupressocr.*; ZITTEL (356) p. 126, and ZITTEL-EASTMAN (357) p. 136.
- + *Cupressocrinus*; FRECH (88) p. 177: muscle-plates (p. 87), anus (p. 137), axial canals of stem (p. 46), axial cords (p. 141); WACHSMUTH & SPRINGER (336): radials and basals and columnals from Sta. Lucia,

- Spain, figured; OEHLERT (250) p. 824.—*C. abbreviatus* (= *C. schlotheimi*) includes *C. nodosus*; BEYER (38) p. 88, pl. iii, figg. 73-76.
- †*Cyathocrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 29.
- Cyathocrinidae*, defined, includes *Dendrocr.*, *Homocr.*, *Cyathocr.*, *Lecythocr.*, *Gissocr.*, *Arachnocr.*, *Sphaerocr.*, *Bactrocr.*, *Codiocr.*, *Achradocr.*, *Botryocr.*, *Euspirocr.*, *Sicyocr.*, *Streptocr.*, *Thenarocr.*, *Mastigocr.*, *Baryocr.*, *Vasocr.*, *Parisocr.*, *Atelestocr.*; ZITTEL (356) p. 134: add *Gastrocr.*, *Rhadinocr.*, and *Lecythiocr.*; ZITTEL-EASTMAN (357) p. 155: sensu Bather, discussed; WACHSMUTH & SPRINGER (336) p. 159.
- Cyathocrinides* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- †*Cyathocrinus*, anals (p. 128), anus (p. 137), arm-branching (p. 77), food-grooves and ambulacra (p. 101), tegmen (p. 95, pl. iii, & p. 114), stem (p. 45); *C. alutaceus*, tegmen (pp. 96, 98, 162); WACHSMUTH & SPRINGER (336).—*C. (?) annulatus*, perhaps same as *C. glomeratus*; COLLINS (54) p. 81, pl. E.—*C. blairi*, redescribed, probably [indubitably] not *Cyathocr.*; MILLER & GURLEY (232) p. 50, pl. iii: compared with *Mespilocrinus*; MILLER & GURLEY (233) p. 39.—*C. brevisacculus*, tegmen; WACHSMUTH & SPRINGER (336) p. 96.—*C. chouteauensis*, column now first described from a small individual; MILLER & GURLEY (233) p. 38, pl. ii.—*C. gilesi* (p. 95), *C. malvaceus* (p. 97), *C. multi-brachiatus* and *C. nodosus* (p. 96), tegmina; WACHSMUTH & SPRINGER (336).—*C. (?) nodulosus* or *nodosus* (p. 80, pl. D), and *C. (?) pinnatus* (p. 76, pl. D), columnals from Cornwall; COLLINS (54).—*C. protuberans* Hall, ? *Pterotocrinus*; WACHSMUTH & SPRINGER (336) p. 793.—*C. ramosus*, see *C. alutaceus* [which is syn.].—*C. (?) tenuistriatus*, columnals from Cornwall; COLLINS (54) p. 79, pl. D.—*C. waldronensis* S. A. Miller, may be young *Thysanocrinus inornatus*; WACHSMUTH & SPRINGER (336) p. 192: redescribed from Niagara group, Hartsville, Ind.; MILLER & GURLEY (232) p. 49, pl. iii.—*C. (?) sp.*, columnals from Cornwall; COLLINS (54) p. 80, pl. D.
- C. barumensis*, Devonian, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*C. (?) carinatus*, based on columnals from Cornwall, Palaeozoic; COLLINS (54) Tr. Geol. Soc. Cornwall, xii, p. 77, pl. D.—*C. faberi*, Burlington Group, Burlington, Iowa, MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 85, pl. v.—*C. (?) leptos*, Crinoid and perhaps Polruan, Cornwall, Palaeozoic, columnals only; COLLINS (54) Tr. Geol. Soc. Cornwall, xii, p. 79, pl. D: n. spp.
- †*Cyclocrinus macrocephalus*; stem-fragments; PARONA & BONARELLI (259) p. 78. [Vide etiam *Acrochordocrinus*.]
- †*Cyphocrinus gorbui* S. A. Miller, syn. of *Hyptiocrinus typus*; WACHSMUTH & SPRINGER (336) p. 201.
- †*Cytocrinus* Roemer, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.—*C. levis*, vide *Melocrinus oblongus* and *M. rameri*.
- †*Dactylocrinus oligoptilus* (olim *Dimerocrinus*) Pacht; JAEKEL (144) p. 44.
- †*Dadocrinus*, considered as ancestor of *Uintacrinus*, its arm structure discussed; BATHER (24) p. 1000 & fig. 13: compared with *Milleriocrinus recubariensis*; BATHER (27) p. 122.—*D. gracilis* from Recoaro; CREMA (59) p. 860, pl. iia.
- †*Decadocrinidae* Bather, "the most heterogeneous assemblage of genera imaginable"; WACHSMUTH & SPRINGER (336) p. 160.
- †*Decadocrinus*, anals; WACHSMUTH & SPRINGER (336) p. 137: vide etiam *Poteriocrinus*.
- †*Dendrocrinidae* Bather, discussed; WACHSMUTH & SPRINGER (336) p. 159.
- †*Dendrocrinus*, compound RR (p. 71), arm-branching (p. 78), anals (pp. 126 & 127; *D. casei*, anals (p. 128); WACHSMUTH & SPRINGER (336).
- †*Desmidocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 79.
- †*Diaboloocrinus*, n. g. with genotype *D. perplexus* (p. 249); *D. vespertalis*

- (olim *Rhodocr. Lyriocr.* vel *Archæocr.*) White, redescribed (p. 251, pl. xi); WACHSMUTH & SPRINGER (336).
- D. hieroglyphicus* (p. 252, pl. x), and *D. perplexus* (p. 249, pl. xi), Trenton group, near Knoxville, Tenn.; WACHSMUTH & SPRINGER (336): n. spp.
- +*Diamenocrinus*, arms; WACHSMUTH & SPRINGER (336) p. 80.
- +*Dichocrinus*, rediagnosed, incl. *Cotyledonocr.* Cass. & Ly. (p. 753), arms (p. 79), arm-branching (p. 77), syzygies (pp. 81, 84), cirri (pp. 41, 44); WACHSMUTH & SPRINGER (336).—*D. angustus*, redescribed (p. 768, pl. lxxvi); *D. blairi*, redescribed (p. 778, pl. lxxv); *D. cinctus*, redescribed (p. 746, pls. lxxv, lxxvii); *D. comis*, redescribed (p. 770, pl. lxxv); *D. constrictus* M. & W., an idem ac *Talarocr. decoris*? (p. 789); *D. coxanus*, redescribed (p. 763, pl. lxxvi); *D. crassitestus*, redescribed (p. 769, pl. lxxvi); *D. dichotomus*, redescribed (p. 777); *D. ficus*, redescribed (p. 774, pl. lxxviii); *D. hamiltonensis*, redescribed (p. 772, pl. lxxvi); *D. humburgi*, redescribed (p. 777); *D. inornatus*, cirri (p. 44), redescribed (p. 770, pl. lxxvii); *D. lachrymosus*, ambulacrals (p. 103), redescribed, incl. *Platycr. subspinulosus* W. & Sp. (p. 754, pl. lxxvii); *D. laevis*, redescribed (p. 765, pl. lxxvii); *D. lineatus*, redescribed (p. 761, pl. lxxvi); *D. liratus*, redescribed (p. 759, pls. lxxvi & lxxvii); *D. ornatus*, redescribed, incl. *D. sculptus* Cass. & Ly. non De Kon. (p. 762, pl. lxxvii); *D. ovatus*, redescribed (p. 760, pls. lxxvi & lxxvii); *D. parvulus*, cirri (p. 44), redescribed (p. 778); *D. pentalobus* (olim *Cotyledonocr.*) Cass. & Ly., redescribed (p. 775, pl. lxxviii); *D. pisum*, redescribed (p. 763, pls. lxxvi & lxxvii); *D. plicatus*, redescribed (p. 758, pl. lxxvii); *D. polydactylus*, ambulacrals (p. 103), redescribed, incl. *D. expansus* M. & W. non De Kon. (p. 756, pl. lxxvii); *D. scitulus*, redescribed, incl. *D. pocillum* Hall (p. 767, pl. lxxviii); *D. striatus*, redescribed (p. 757, pl. lxxvii); *D. ulrichi*, redescribed (p. 772); WACHSMUTH & SPRINGER (336).
- D. bozemanensis*, Upper Burlington or Lower Keokuk, Bridger Mts., near Bozeman, Montana; MILLER & GURLEY (235), Bull. Illinois Mus. xii, p. 44, pl. iii.—*D. delicatus*, Kinderhook group of Marshall Co., Ia., and Lower Burlington Limest. of Burlington, Ia., cirri (p. 44); WACHSMUTH & SPRINGER (336), p. 766, pl. lxxvii.—*D. huntsvillei*, St. Louis group, Huntsville and Whitesburg, Ala., incl. *Platycr. parvulus* M. & W. (nom. preocc. S. A. Miller); *op. cit.* p. 773, pl. lxxv.—*D. oblongus*, Warsaw Limest., near Bloomington, Ind.; *op. cit.* p. 759, pl. lxxvii.—*D. pendens*, Upper Burlington Limest., Burlington, Ia.; *op. cit.* p. 774, pl. lxxviii.—*D. superstes*, Kaskaskia group, Pulaski Co., Ky., and Huntsville, Ala.; *op. cit.* p. 767, pl. lxxvi.
- Dicyclia* Bather, criticised; WACHSMUTH & SPRINGER (336) p. 157.
- +*Dimenocrinus*, made syn. of *Thysanocr.*; WACHSMUTH & SPRINGER (336) p. 191.—*D. oligoptilus* Pacht., referred to *Dactylocr.* Quenst.; JAEKEL (144) p. 45.—*D. oligoptilus* and *D. aptilis*, referred to *Taxocr.*; WACHSMUTH & SPRINGER (336) p. 192.
- +*Dizygocrinus*, n. g., with genotype *D. indianensis*; WACHSMUTH & SPRINGER (336) p. 413.—*D. andreweianus* (olim *Actinocr.* et *Batocr.*) McChesney, redescribed (p. 433, pl. xxix); *D. biturbinatus* (olim *Actinocr.* et *Batocr.*) redescribed, incl. *Batocr. lyonanus* Miller & Gurley (p. 427 pl. xxxiii); *D. crawfordsvillensis* (olim *Batocr.*), Miller's description translated (p. 417); *D. decoris* (olim *Batocr.*) S. A. Miller, redescribed (p. 420, pl. xxxiv); *D. dodecadactylus* (olim *Actinocr.* et *Batocr.*) M. & W., redescribed (p. 432, pl. xxxix); *D. euonus* (olim *Batocr.*); M. & W., redescribed, incl. *B. subconicus* Worthen (p. 430, pl. xxxv); var. *abscissus* (olim *Batocr. abscissus* Rowley & Hare) incl. *B. venustus* S. A. Miller (p. 431, pl. xlvi); *D. facetus* (olim *Batocr.*) Miller & Gurley, redescribed (p. 418); (?) *D. gorbyi* (olim *Batocr.*) S. A. Miller's description translated (p. 426); *D. gurleyi* (olim *Batocr.*) S. A. Miller non Rowley & Hare, redescribed (p. 422, pl. xxxiv); *D. indianensis*, redescribed, arm-branching discussed (p. 415, pls. xxxii, xxxv); n. var. *simplex*, Keokuk group, Crawfordsville,

- Ind. (p. 416, pl. xxxiii); *D. montgomeryensis* (olim *Batocr.*) Worthen, redescr., incl. *Batocr. gurleyi* Rowley & Hare non Miller, and *B. sweeti* Rowley & Hare (p. 428, pls xxxiii, xlv); var. nov. *unibrachiatus*, Upper Keokuk, Keokuk, Ia. (p. 429, pl. xxxiii); *D. originarius* (olim *Eretmocrinus*) W. & Sp., redescr., incl. *Eretmocr. varsoviensis* (p. 421, pl. xxxiii); var. *adultus* (olim *Eretmocr. adultus*) W. & Sp., redescr., incl. *Batocr. mediocris* and *B. boonwillensis* S. A. Miller (p. 422, pl. xxxv); *D. rotundus* (olim *Actinocr. et Batocr.*) Yand. & Shum., redescr., incl. *Actinocr. oblatum* Hall (p. 431, pl. xxix); *D. whitei* (olim *Batocrinus*) W. & Sp., redescr., incl. *Batocr. spergenensis* S. A. Miller (p. 419, pl. xxxiii); *D. whitei*, var. nov. *didactylus*, Upper Keokuk, Hamilton, Ill. (p. 420, pl. xxxv); *D. unionensis* (olim *Batocr.*) Worthen, redescr., incl. *B. pulchellus* S. A. Miller, *B. davisii* Rowley & Hare, and possibly *Actinocrinus caroli* Hall (p. 424, pl. xxxv); var. *divalis* (olim *Batocr. divalis* S. A. Miller), redescr. (p. 425, pl. xxxv); WACHSMUTH & SPRINGER (336).
- D. cantonensis*, Keokuk group, Canton and Edwardsville, Ind.; WACHSMUTH & SPRINGER (336) p. 423, pl. xxxiii.—*D. mutabilis*, Keokuk group, Indian Creek, Montgomery Co.; *op. cit.* p. 429, pl. xxxv: arm-branching discussed, p. 414 : n. spp.
- †*Dolatocrinites*, sub-fam., defined; WACHSMUTH & SPRINGER (336) pp. 264, 304.
- †*Dolatocrinus*, rediagnosed, has slit-like pores (p. 310), arm-branching (p. 77), pores (p. 122); WACHSMUTH & SPRINGER (336).—*D. canadensis*, redescr., perhaps = *Cacabocrinus troosti* Hall (p. 315, pl. xiv); *D. glyptus*, redescr., incl. var. *intermedius* Hall, and *D. ornatus* Meek (p. 317, pl. xxvi); *D. lacus*, redescr. (p. 311, pl. xxvi); *D. latus*, redescr., incl. var. *multilira* Hall (p. 319, pl. xxvi); *D. marshi*, redescr. (p. 312, pl. xxvi); var. nov. *hamiltonensis*, Hamilton group, Bear Grass quarries, Louisville, Ky. (p. 314, pl. xxv); *D. speciosus*, redescr. (p. 323, pl. xxv); *D. triadactylus*, redescr. (p. 316, pl. xxvi); WACHSMUTH & SPRINGER (336).
- D. aplatus*, Hamilton Group, Charlestown, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 48, pl. iii: tegmen figd; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 49, pl. iii.—*D. argutus*, *ibid.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 41, pl. iii.—*D. arrosus*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 52, pl. iii.—*D. asper*, *ibid.*; *op. cit.* p. 47, pl. iii.—*D. aspratilis*, *ibid.*; *op. cit.* p. 49, pl. iii.—*D. basilicus*, *ibid.*; *op. cit.* p. 43, pl. iii.—*D. bellarugosus*, *ibid.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 43, pl. iii.—*D. calatus*, *ibid.*; *op. cit.* p. 46, pl. iii.—*D. charlestownensis*, *ibid.*; *op. cit.* p. 44, pl. iii.—*D. cistula*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 46, pl. iii.—*D. dispar*, *ibid.*; *op. cit.* p. 40, pl. ii.—*D. dissimilaris*, *ibid.*; *op. cit.* p. 54, pl. iii.—*D. excavatus*, Upper Helderberg, Clark Co., Ind.; WACHSMUTH & SPRINGER (336) p. 321, pls xxv & xxvi.—*D. iconidactylus*, Hamilton group, Louisville, Ky.; *op. cit.* p. 319, pl. xxvi.—*D. indianensis*, Hamilton group, Charlestown, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 40, pl. iii.—*D. laguncula*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 51, pl. iii.—*D. lyoni*, *ibid.*; *op. cit.* p. 44, pl. iii.—*D. lyoni*, Upper Helderberg group, Clark Co., Ind.; WACHSMUTH & SPRINGER (336) p. 314, pl. xxv [nom. preocc.].—*D. major*, Upper Helderberg, Falls of the Ohio; *op. cit.* p. 322, pl. xxv.—*D. neglectus*, Hamilton group, near Charlestown, Ind.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 37, pl. ii.—*D. peculiaris*, Hamilton group, Charlestown, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 55, pl. iii.—*D. preciosus*, *ibid.*; *op. cit.* p. 41, pl. ii.—*D. tuberculatus*, Hamilton group, Clark Co., Ind.; WACHSMUTH & SPRINGER (336) p. 324, pl. xxv.

- +*Dorycrinus*, rediagnosed and much restricted (p. 454), ambulacra (p. 102, pl. iv), tegmen (p. 107, pl. v); WACHSMUTH & SPRINGER (336).—*D. amoenus* S. A. Miller=*Aorocr. parvus* (p. 477); *D. cornigerus*, redescri., incl. *Actinocr. divaricatus* and *A. decornis* Hall (p. 458, pls. xlii, xliii, xlv); *D. gouldi*, redescri. (p. 456, pls. xliii & xlv); *D. intermedius* (olim var. *D. quinguelobi*), redescri. (p. 461, pl. xlv); *D. kelloggi* Worthen=*Aorocr. spinosulus* (p. 478); *D. mississippiensis*, redescri., incl. var. *spiniger* Hall (p. 455, pls. xliii & xlv); *D. missouriensis*, redescri., incl. *D. desideratus* (p. 463, pls. xliii, xlv); *D. quinguelobus*, redescri. (p. 460, pl. xlii); *D. ræmerti*, redescri. (p. 464, pl. xlv); *D. subturbinatus*, redescri. (p. 466, pl. xliii); *D. unicornis*, redescri., incl. *Actinocr. pendens* Hall, *D. lineatus* S. A. Miller, and *D. inflatus* Rowley & Hare (p. 468, pl. xlv); *D. unispinus*, redescri., incl. *Actinocr. trinodus* Hall (p. 467, pl. xlv); WACHSMUTH & SPRINGER (336).
- D. alabamensis*, Keokuk group ?, Chert Hill, Ala.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 15, pl. iii.—*D. faberi*, Burlington group, Burlington, Ia.; *op. cit.* p. 19, pl. i.—*D. sampsoni*, Burlington group, Sedalia, Mo.; *op. cit.* p. 17, pl. iii.—*D. suboviformis*, Burlington group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 30, pl. ii : n. spp.
- +*Ectenocrinus*, stem (p. 40), compound RR (p. 71), anals (p. 127); WACHSMUTH & SPRINGER (336).
- +*Edriocrinus*, base; WACHSMUTH & SPRINGER (336) p. 59.
- Emedullata* Chapman; WACHSMUTH & SPRINGER (336) p. 30.
- +*Enallocrinus*, stem-lumen; WACHSMUTH & SPRINGER (336) p. 46.
- +*Encrinuræ*, extended (p. 162), tegmen (p. 116); WACHSMUTH & SPRINGER (336): defined, includes *Encr.*, *Dadocr.*; ZITTEL (356) p. 139: defined, includes *Cromyocr.*, *Phialocr.*, *Stemmatocr.*, *Eupachycr.*, *Erisocr.*, *Ceriocr.*, *Ulocr.*, *Holocr.*, *Dadocr.*; ZITTEL-EASTMAN (357) p. 160.
- Encrinuridea* T. T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- +*Encrinurus*:—*E. aculeatus*, *E. brahli*, and *E. carnalli*; WAGNER (337) p. 100.—*E. gracilis*, arms; WACHSMUTH & SPRINGER (336) p. 80.—*E. liliiformis*; WAGNER (337) p. 100: arms (p. 80), syzygies (p. 81), axial canals in cup (p. 140); WACHSMUTH & SPRINGER (336), and *E.*, sp. columnals, Muschelkalk, G. of Ismid; TOULA (329) p. 158, pl. xviii.—*E. pentactinus* Geinitz, in N. Jahrb. f. Min. 1838, p. 530, is stem of *Holocr. wagneri*; WAGNER (337) p. 99.
- Encrinurus*, n. sp., Muschelkalk, above Creto, Pieve di Buono, in Judicarien; also "erster Basalkranz eines Crinoiden,...zwischen Prezzo und Cimego, im anstehenden Prezzo-kalk"; ARTHABER (16) Verh. geol. Reichsanst. 1896, p. 265.
- +*Entrochus dubius* (p. 717), *E. silesiacus* (p. 717), and *E. cf. liliiformis* (p. 716); PHILIPPI (266).
- +*Epactocrinus grandis*, syzygies; WACHSMUTH & SPRINGER (336) p. 82.
- +*Epascocrinuridea*, Neumayr (p. 29), criticised (p. 148); WACHSMUTH & SPRINGER (336).
- +*Erisocrinus*, arms (p. 80), anals (p. 133); WACHSMUTH & SPRINGER (336).—*E. inflexus*; SMITH (313) p. 236.
- +*Eretmocrinus*, rediagnosed (p. 385); *E. calyculoides*, redescri., with var. nov. *nodosus*, Upper Burlington, Pleasant Grove, Ia. (p. 395, pl. xxxiv); *E. clio*, redescri. (p. 393, pls. xxxvi & xxxvii); *E. cloelia*, redescri. (p. 398, pl. xxxvi); *E. corbulis*, redescri. (p. 399, pl. xxxvi); *E. coronatus*, redescri. (p. 403, pl. xxxvii); *E. intermedius*, redescri. (p. 404, pl. xxxiii); WACHSMUTH & SPRINGER (336).—*E. konincki*, referred to *Batocr.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 13.—*E. leucocia*, redescri., incl. *Dorycr. confragosus* and *Batocr. blairi* S. A. Miller (p. 401, pl. xxxvi); *E. magnificus* Ly. & Cass. non Quenst., redescri., incl. *E. lyonanus* S. A. Miller (p. 396, pl. xxxvii);

- E. matuta*, redescri., var. *attenuata* not accepted (p. 396, pl. xxxvii); *E. neglectus*, redescri. (p. 394, pl. xxxvi); *E. pregravis*, redescri. (p. 406, pl. xxxiv); *E. ramulosus*, redescri. (p. 387, pl. xxxvi); *E. remibrachiatus*, redescri., with var. nov. *expansus*, Burlington and Keokuk transition bed, near Burlington, Ia., and Henderson Co., Ill. (p. 388, pl. xxxvii); *E. varsoviensis* Worthen, syn. of *Dizygocr. originarius* (p. 421); WACHSMUTH & SPRINGER (336).
- E. depressus*, Upper Burlington, Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 392, pl. xxxvi.—*E. granuliferus*, Keokuk group, Indian creek, Montgomery Co., Ind. and Canton, Ind.; *op. cit.* p. 390, pl. xxxiv.—*E. minor*, Upper Burlington, Burlington, Ia.; *op. cit.* p. 391, pl. xxxvi.—*E. rugosus*, Lower Burlington, Burlington, Ia.; *op. cit.* p. 402, pl. xxxvi: n. spp.
- †*Eucalyptocrinus*; FRECH (88) p. 177: rediagnosed and structure explained, incl. *Hypanthocrinus*; WACHSMUTH & SPRINGER (336) p. 332.—*E. coelatus* (errore pro *cælatus*), redescri., incl. *E. decorus* Hall non Phill. and *E. papulosus* Hall (p. 336, pl. lxxxiii); *E. crassus*, end of stem, terminal plate (p. 51), redescri., incl. *E. constrictus* Hall, and *E. chicagomensis* Winchell & Marcy (p. 342, pl. lxxxi); *E. depressus*, redescri. (p. 349, pl. lxxxiii); *E. egani*, redescri. (p. 352, pl. lxxxii); *E. ellipticus* S. A. Miller, young form, sp. indet. (p. 335); *E. elrodi*, redescri. and revised, syn. *E. cælatus* Hall pars and *E. subglobosus* S. A. Miller (p. 339, pl. lxxxi); *E. inconspicuous*, redescri. (p. 346, pl. lxxxiii); *E. lindahli*, redescri., incl. *E. wortheni* S. A. Miller (p. 347, pl. lxxxii); *E. magnus*, redescri. (p. 348, pl. lxxxii); *E. obconicus*, redescri. (p. 353, pl. lxxxiii); *E. ornatus*, redescri. (p. 340, pl. lxxxii); *E. ovalis*, redescri. and compared with *E. crassus* (p. 344, pl. lxxxii); *E. proboscidealis*, redescri. (p. 352, pl. lxxxii); *E. rotundus*, redescri. (p. 350); *E. splendidus*, redescri. (p. 350); *E. tuberculatus*, redescri., incl. *E. muralis* Ringueb. (p. 337, pl. lxxxiii); *E. turbinatus*, redescri. (p. 351, pl. lxxxii); WACHSMUTH & SPRINGER (336).
- E. milligane*, Niagara group, Decatur Co., Tenn.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 88, pl. v.—*E. ventricosus*, Niagara group, Decatur and Wayne Cos., Tenn.; WACHSMUTH & SPRINGER (336) p. 341, pl. lxxxiii: n. spp.
- Eucladocrinus*, rediagnosed (p. 719), arm-branching (p. 76), arm-structure (pp. 84 & 85), ambulacrals (p. 101); WACHSMUTH & SPRINGER (336).—*E. millebrachiatus*, axillary ambulacrals (p. 104), redescri. (p. 720, pls. lxxiii & lxxiv), var. nov. *immaturus*, Burlington and Keokuk Transition bed, near Burlington, Ia. (p. 722, pl. lxxxiii); *E. montanensis*, redescri. (p. 723, pl. lxxii); *E. pleuroviminus*, redescri., incl. *Platycr. discoideus* Hall non O. & S. (p. 724, pls. lxxiii & lxxiv); *E. prænuntius* (olim *Platycr.*) W. & Sp., redescri. (p. 726, pl. lxxiii); *E. tuberosus* (olim *Platycr.*) Hall, redescri., incl. *P. occidentalis* S. A. Miller (p. 728, pl. lxxii); WACHSMUTH & SPRINGER (336).
- Eucrinoides* Zittel; WACHSMUTH & SPRINGER (336) p. 23.
- †*Eucrinus* made syn. of *Thysanocrinus*, exc. *E. minor* and *E. venustus*; WACHSMUTH & SPRINGER (336), p. 192.
- Eudiocrinus* sp.; KOEHLER (163) p. 478: probably *E. atlanticus*; KOEHLER (164) p. 101.
- †*Eugeniocrinida*, defined, includes *Eugeniocr.*, *Eudesicr.*, *Tetracr.*, *Phyllocr.*; ZITTEL (356) p. 142, & ZITTEL-EASTMAN (357) p. 170.
- †*Eugeniocrinus*:—*E. cf. hoferi*, Oxfordian, Caucasus; FOURNIER (85) p. 112.
- E. gevreyi*, Neocomian of St.-Pierre de Cherenne (Isère); LORIOI (196) Mem. Soc. Geneve, xxxii, p. 24, pl. iii: n. sp.
- †*Eupachycrinus*, chambered organ (p. 45), arms (p. 80); WACHSMUTH & SPRINGER (336).



- +*Euspirocrinus*, anals (p. 127); *E. spiralis*, tegmen (pp. 96, 98); WACHSMUTH & SPRINGER (336).
- +*Eutrochocrinus*, n. g., with genotype *E. christyi*; WACHSMUTH & SPRINGER (336) p. 408.—*E. christyi* (olim *Batocrinus*), redescri., incl. *B. bisbrachiatus* Whitf. and *B. altiusculus* Miller & Gurley, with var. *trochiscus* (p. 409, pls. xxix, xxxii); *E. christyi*, branching anal tube, and regenerated ditto (p. 135, pl. iv); *E. lovei*, redescri. (p. 412, pls. xxix, xxxii); *E. planodiscus*, redescri. (p. 411, pl. xxxii); WACHSMUTH & SPRINGER (336).
- +*Extracrinus*, base; WACHSMUTH & SPRINGER (336), pp. 53, 61, 65.
- Fistulata* Chapman; WACHSMUTH & SPRINGER (336) p. 30: sensu W. & Sp. (p. 26), redefined (p. 150), includes *Hybocrinidae*, *Heterocrinidae*, *Anomalocrinidae*, *Belemnocrinidae*, *Gasterocomidae*, *Catilloocrinidae*, *Calceocrinidae*, *Dendroocrinidae*, *Cyathocrinidae*, *Poteriocrinidae*, *Astylocrinidae*, *Encrinidae*, *Pentacrinidae*; WACHSMUTH & SPRINGER (336) p. 157: (= *Inadunata fistulata* W. & Sp., *Cyathocrinacea* Neumayr), defined, includes families *Hybocrinidae*, *Heterocrinidae*, *Cyathocrinidae*, *Poteriocrinidae*, *Calceocrinidae*, *Catilloocrinidae*, *Belemnocrinidae*; ZITTEL (356) p. 134, & ZITTEL-EASTMAN (357) p. 150.
- +*Flabellocrinus cassianus* Klipstein, is an *Encrinus* allied to *E. cassianus* Laube; BATHER (27) p. 121.
- Flexibilia* (= *Articulata* W. & Sp. non Müller; *Ichthyocrinacea*), defined, includes families *Ichthyocrinidae*, *Marsupitidae*, *Uintacrinidae*; ZITTEL (356) p. 137, & ZITTEL-EASTMAN (357) p. 163.
- +*Forbesiocrinus*, base; WACHSMUTH & SPRINGER (336) p. 58.—“*Forbesiocr.*” *agassizi*, arm-branching, it is not a true *Forbesiocr.*; WACHSMUTH & SPRINGER (336) p. 77.—*F. incurvus* Trautsch., made type of n. g. *Synerocrinus*; JAEKEL (144) p. 46.—*F. multibrachiatus*, Lyon & Casseday's description quoted, and Lyon's original drawing now first published; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 56, pl. iv.
- F. greenei*, Keokuk Group, Edwardsville, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 57, pl. iv.—*F. jerseyensis*, Warsaw Group, Jersey Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 58, pl. iv.—*F. macadamsi*, Keokuk Group, Jersey Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 58, pl. v.—*F. washingtonensis*, Keokuk Group, Washington Co., Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 54, pl. iii: n. spp.
- +*Gasterocomidae*, moved from *Larviformia* to *Fistulata*; WACHSMUTH & SPRINGER (336) p. 157: defined, incl. *Gasterocoma*, *Myrtillocr.* and *Nanocr.*; ZITTEL (356) p. 126: defined; ZITTEL-EASTMAN (357) p. 155.
- +*Gasterocoma*, vide *Epactocrinus*.
- +*Gaurocrinus* S. A. Miller, rejected; WACHSMUTH & SPRINGER (336) p. 177.—*G. splendens*, vide *Ptychocrinus*.
- +*Gazacrinus inornatus*, S. A. Miller, syn. of *Idiocrinus elongatus*; WACHSMUTH & SPRINGER (336) p. 203.
- +*Gennaeocrinus*, rediagnosed (p. 547); *G. eucharis*, redescri. (p. 549, pl. xxxiv); *G. kentuckiensis*, redescri., incl. *Actinocr. cornigerus* Ly. and Cass. non Hall, et *A. nyssa* Hall (p. 548, pl. xxxiv); WACHSMUTH & SPRINGER (336).
- +*Gilbertsocrinus*, syn. *Ollacr.*, *Goniasteroidocr.*, and *Trematocr.*, rediagnosed and discussed (p. 233), arms (p. 86), pores (p. 122); WACHSMUTH & SPRINGER (336).—*G. fascellus*, redescri. (p. 245, pl. xvii); *G. obovatus*, redescri. (p. 241, pl. xvii); *G. reticulatus*, redescri. (p. 244, pl. xvii); *G. spinigerus*, redescri. (p. 247, pl. xv); *G. tenuiradiatus*, redescri. (p. 246, pl. xvii); *G. tuberculosus*, redescri. (p. 243, pl. xvii); *G. tuberosus*, redescri. (p. 239, pls. xv, xvi, xvii); *G. typus*, redescri., incl. *Trematocr. papillatus* Hall (p. 242, pls. xiv, xvii); WACHSMUTH & SPRINGER (336).

- G. dispansus*, Keokuk group, Indian Creek, Montgomery Co., Ind.; WACHSMUTH & SPRINGER (336) p. 240, pl. xv: n. sp.
- +*Glyptaster*, made syn. of *Thysanocrinus*; WACHSMUTH & SPRINGER (336) p. 191.
- G. milliganae*, Niagara Group, Decatur Co., Tenn.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 87, pl. v: n. sp.
- +*Glyptocrinidae* S. A. Miller, discussed; WACHSMUTH & SPRINGER (336) p. 175; *Glyptocrinidae*, defined, incl. *Glyptocr.*, *Glyptaster*, *Reteocr.*, *Canistrocr.*, *Ptychocr.*, *Ascocr.* (= *Ascocystites* Barr.), *Lampteroocr.*, *Eucr.*, *Sageniocr.*, *Dimerocr.*, *Stelidiocr.* (*Harmocr.*); ZITTEL (356) p. 130: in part referred to *Thysanocrinidae*; ZITTEL-EASTMAN (357) p. 145.
- +*Glyptocrinus*; JAMES (146): rediagnosed, incl. *Pycnocr.* S. A. Miller (p. 267), root (p. 44), arms (p. 79), interbranchials (p. 117), tegmen (p. 120); WACHSMUTH & SPRINGER (336).—*G. angularis* Miller & Dyer, syn. of *Ptychocr. parvus*; *G. argutus* Walcott, syn. of *Stelidiocr.*; *G. armosus* McChesney, referred to *Siphonocr.*; *G. baeri* Meek, referred to *Xenocr.* (also p. 183); *G. carleyi* Hall, referred to *Muriocr.*; and *G. cognatus* Miller, syn. of *Reteocr. onealli*; WACHSMUTH & SPRINGER (336) p. 269.—*G. decadactylus*, redescri., has no IBB (p. 270, pls. xx & xxi), arm-structure (p. 84); *G. dyeri*, redescri., incl. *G. subglobosus* and *G. richardsoni* (p. 271, pls. xx & xxi), arm-structure (p. 84); *G. expansus* Phillips, referred to *Sagenocrinus* (p. 269); *G. fimbriatus* Shumard, not accepted (p. 269); (?) *G. fornshelli* (p. 45), redescri., with special note on stem (p. 276, pl. xx), stem and base (p. 66); WACHSMUTH & SPRINGER (336).—*G. gracilis* Wetherby, syn. of *Ptychocr. parvus*; *G. harrisi* Miller, referred to *Compsocr.*; *G. lacunosus* Billings, syn. of *Archæocr.*; and *G. libanus* Safford, not accepted; WACHSMUTH & SPRINGER (336) p. 269.—*G. marginatus*, redescri., not *Archæocr.* as supposed (p. 275, pl. xx); *G. miamiensis* Miller, referred to *Compsocr.* (p. 269); *G. nobilis* Hall, referred to *Siphonocr.* (p. 269); *G. ornatus*, redescri., column figd by Billings doubtfully of this species (p. 274, pl. xx); WACHSMUTH & SPRINGER (336).—*G. parvus* Hall, referred to *Ptychocr.*; *G. pattersoni* Miller, not accepted; *G. plumosus* Hall, not accepted; *G. priscus* Billings, syn. of *Periglyptocr.*; and *G. quinquepartitus* Billings, not accepted; WACHSMUTH & SPRINGER (336) p. 269.—*G. ramulosus*, redescri. (p. 273, pl. xx); *G. sculptus* S. A. Miller, has IBB and is a *Rhaphanocr.* (pp. 260, 269); (?) *G. shafferi* with its var. *germanus* S. A. Miller, are probably young examples of *G. dyeri* (p. 272, pl. xxi); *G. siphonatus* Hall, syn. of *Siphonocr. armosus* (p. 269); *G. subnodosus* Walcott, syn. of *Rhaphanocr.* (p. 269); WACHSMUTH & SPRINGER (336) p. 269.
- +*Gnorimocrinus*, base (p. 58), anal tube (p. 138); WACHSMUTH & SPRINGER (336).
- +*Goniasteroidocrinus*, syn. of *Gilbertocrinus*; WACHSMUTH & SPRINGER (336) p. 236.
- G. faberi*, Subcarboniferous, Joplin, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 84, pl. v: n. sp.
- +*Graphiocrinus*, cirri (p. 44), base (p. 60), anals (pp. 128, 133), arms, validity of name questioned, relations to *Phialocr.* (p. 80); WACHSMUTH & SPRINGER (336): not found in America, but forms referred to it belong to *Scaphiocr.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 35.—*G. encrinoides*, position of anal; WACHSMUTH & SPRINGER (336) p. 80.
- +*Guetardocrinus*, radials (p. 69), interbranchials (p. 117); WACHSMUTH & SPRINGER (336).
- +*Habrocrinus*, arm-branching (p. 79); *H. ornatus*, ridges on tegmen (p. 118). Subgen. nov. *Acacocr.* with genotype *H. (A.) elrodii*, Niagara group, Hartsville, Bartholomew Co., Ind. (p. 515, pl. xxxiv), *H. (A.) americanus*,

- Niagara group, St. Paul, Ind. (p. 516, pl. xxxiv); WACHSMUTH & SPRINGER (336): n. spp.
- +*Hudrocrinus*, arm-branching (p. 77), rediagnosed (p. 327); *H. discus*, redescri. (p. 328, pl. xxiv); *H. plenissimus*, redescri. (p. 328, pl. xxiv); WACHSMUTH & SPRINGER (336).
- +*Hapalocrinida*, the family rejected; BATHER (30) p. 343.
- +*Hapalocrinus*, erected as single genus with subgenera *Hapalocrinus*, s. str. (*H. elegans*), group of *H. (Agriocrinus) Frechi*, and group of *H. (Thallocrinus) retarius*; FRECH (88) p. 182: rediagnosed, includes *Agriocrinus* and *Thallocrinus*, genotype is *H. elegans* Jaekel; BATHER (30) p. 344.—*H. retarius*, systematic position discussed; BATHER (30) p. 342: referred to n. g. *Clematocrinus*; JAEKEL (144) p. 47.
- H. victoriae*, Silurian, Melbourne; BATHER (30) Geol. Mag. (N. S. Dec. iv) iv, p. 345, pl. xv: n. sp.
- Haplocrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 29.
- +*Haplocrinida*, defined, includes *Haplocrinus*; ZITTEL (356) p. 124, & ZITTEL-EASTMAN (357) p. 134.
- Haplocrinides* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- +*Haplocrinus*, anus (p. 137), compound RR (p. 72), orals (pp. 89, 92, pl. iii); WACHSMUTH & SPRINGER (336).—*H. stellaris*; BEYER (38) p. 88, pl. iii, f. 79.
- +*Harmocrinus* Ang., is possibly *Thysanocrinus*; WACHSMUTH & SPRINGER (336) p. 280.
- +*Hemicrinus astieri*; KILIAN (157) p. 733.
- +*Herpetocrinus*, cirri; WACHSMUTH & SPRINGER (336) p. 44.
- +*Heterocrinida*, armlets; WACHSMUTH & SPRINGER (336) p. 82: defined, includes *Heterocr.*, *Iocr.*, *Stenocr.*, *Ophiochr.* [err. pro *Ohiochr.*]; ZITTEL (356) p. 134: add *Herpetocr.*; ZITTEL-EASTMAN (357) p. 152.
- +*Heterocrinus*, relations to *Ottawacr.* (p. 68), stem (p. 40), compound RR (p. 71), syzygies (p. 82), anals (p. 127); WACHSMUTH & SPRINGER (336).—*H. bellewillensis*, anals; WACHSMUTH & SPRINGER (336) p. 132.—*H. pygmaeus* is young of *Dactylocr. oligoptilus*; JAEKEL (144) p. 44.
- +*Hexacrinida*, redefined, analysis and distribution of genera; WACHSMUTH & SPRINGER (336) p. 741: defined, includes *Dichocr.*, *Hysticr.*, *Hexacr.*; ZITTEL (356) p. 127: also *Arthroacantha*, *Pterotocr.*, *Talarocr.*; ZITTEL-EASTMAN (357) p. 140.
- +*Hexacrinus*; FRECH (88) p. 177: rediagnosed (p. 744), arms (p. 79); WACHSMUTH & SPRINGER (336).—*H. elongatus*?; BEYER (38) p. 89, pl. iii, fig. 77.—*H. leai*, redescribed; WACHSMUTH & SPRINGER (336) p. 746, pl. lxxviii.—*H. ornatus*?; BEYER (38) p. 89, pl. iii, fig. 78.
- H. occidentalis*, Hamilton group, near Davenport, Ia.; WACHSMUTH & SPRINGER (336) p. 745, pl. lxxviii: n. sp.
- +*Holocrinus wagneri*; WAGNER (337) p. 100.
- Holopida*, defined, includes *Cyathidium*, *Holopus*, *Cotylederma*; ZITTEL (356) p. 143, and ZITTEL-EASTMAN (357) p. 171.
- +*Homocrinus*, arm-branching (p. 78), anals (p. 127); WACHSMUTH & SPRINGER (336).—*H. scoparius*, cirri; WACHSMUTH & SPRINGER (336) p. 45.
- +*Hoplocrinus*, compound RR; WACHSMUTH & SPRINGER (336) p. 71.
- +*Hybocrinida*, tegmen; WACHSMUTH & SPRINGER (336) p. 116: defined, includes *Hybocr.* and *Bacrocr.*; ZITTEL (356) p. 134: add *Hoplocr.* and *Hybocystis*; ZITTEL-EASTMAN (357) p. 151.
- +*Hybocrinus*, tegmen (p. 162), base (p. 67), compound RR (p. 71), anals (p. 127); *H. conicus*, anus (p. 137); WACHSMUTH & SPRINGER (336).
- +*Hybocystis*, considered as link with Cystids; WACHSMUTH & SPRINGER (336) p. 146.
- +*Hydreionocrinus*, arms; WACHSMUTH & SPRINGER (336) p. 80.—*Hydreio[nocrinus mucrospinus*; SMITH (313) p. 236.

*Hyocrinus*, base (pp. 58, 63), arm-branching (p. 78), orals (p. 99, pl. iii); WACHSMUTH & SPRINGER (336).

†*Hypanthocrinus*, syn. of *Eucalyptocr.*; WACHSMUTH & SPRINGER (336) p. 335.

*Hypasocrinioidea* Neumayr (p. 29), criticised (p. 148); WACHSMUTH & SPRINGER (336).

†*Hypocrinus*, vide sub IV g.

†*Hyptiocrinus*, rediagnosed (p. 200), and *H. typus* (syn. *Cyphocrinus gorbys* S. A. Miller), redescri.; WACHSMUTH & SPRINGER (336) p. 201, pl. xix.

†*Hystericrinus* et *H. carpenteri* = *Arthracaantha* et *A. punctobrachiata* [qq. v.]; WACHSMUTH & SPRINGER (336) pp. 748, 751.

*Ichthyocrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 29.

†*Ichthyocrinidae*, separated from *Taxocrinidae*; JAEKEL (144) p. 47: stem (p. 40), tegmen (p. 113); WACHSMUTH & SPRINGER (336): defined, includes *Ichthyocr.*, *Lecanocr.*, *Homalocr.*, *Anisocr.*, *Calpiocr.*, *Cyrtidocr.*, *Pycnosacrus*, *Lithocr.*, *Taxocr.*, *Forbesiocr.*, *Onychocr.*, *Mespilocr.*; ZITTEL (356) p. 137, & ZITTEL-EASTMAN (357) p. 163.

†*Ichthyocrinus*, base (p. 58), arm-branching (p. 77), articulation of arms (p. 87); WACHSMUTH & SPRINGER (336).

†*Idiocrinus*, rediagnosed (p. 202), and *I. elongatus* (syn. *Gazacrinus inornatus* S. A. Miller), redescri. (p. 203, pl. xviii); (?) *I. immaturus* (olim *Thysanocrinus*) Hall (p. 206, pl. xviii); (?) *I. tennesseensis* (olim *Centrocrinus*) Worthen, redescri. (p. 206, pl. xviii); WACHSMUTH & SPRINGER (336).

*I. ventricosus*, Upper part of Niagara group, near St Paul, Ind., oral pyramid previously described as tegmen of *Pisocrinus*; WACHSMUTH & SPRINGER (336) p. 205, pl. xviii: n. sp.

†*Impinnata*, sub-order of *Articulata*, defined; WACHSMUTH & SPRINGER (336) p. 152.

*Inadunata* W. & Sp. (p. 26), redefined (pp. 149 & 150); WACHSMUTH & SPRINGER (336).

*Inarticulata* J. S. Miller; WACHSMUTH & SPRINGER (336) p. 13.

†*Iocrinus*, relations to *Merocrinus* (p. 68), compound RR (p. 71), arm-branching (p. 78), anal sac (p. 158), anals (pp. 126 & 127); WACHSMUTH & SPRINGER (336).

†*Lampterocrinus*, rediagnosed, *L. inflatus* Hall and *L. parvus*, not recognised (p. 207); *L. tennesseensis*, redescribed (p. 208, pl. xiii); WACHSMUTH & SPRINGER (336).

*Larviformia* W. & Sp. (p. 26), redefined (p. 150), include *Haplocrinidae*, *Pisocrinidae*, *Symbathocrinidae*, *Cupressocrinidae* (p. 157); WACHSMUTH & SPRINGER (336): (= *Inadunata larviformia* W. & Sp., and *Haplocrinacea* Neumayr), defined, includes families *Haplocrinidae*, *Cocco-crinidae*, *Stephanocrinidae*, *Pisocrinidae*, *Symbathocrinidae*, *Cupressocrinidae*; ZITTEL (356) p. 124, see also ZITTEL-EASTMAN (357) p. 134.

†*Lecanocrinus*, position of mesentery and gut; JAEKEL (142) p. 30: base; WACHSMUTH & SPRINGER (336) p. 58.—*L. billingsi*, anals, and *L. macropetalus*, anals and interbranchials; WACHSMUTH & SPRINGER (336) p. 139.

*L. greeni*, Niagara Group, Louisville, Ky.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 52, pl. iii: n. sp.

*Liberia* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.

†*Lobocrinus*, n. g., with genotype *L. nashville* [syn. ac *Uperocrinus*, melius *Hyperocrinus*]; WACHSMUTH & SPRINGER (336) p. 434.—*L. æquibrachiatus* (olim *Actinocr.* et *Batochr.*) McChesney, redescri. (p. 440, pls. xxix, xlvi), var. *asteriscus* (olim *Batochr. asteriscus* M. & W.), redescri., incl. var. *alatus* Hall (p. 441, pl. xxix); *L. inflatus* (olim *Batochr.*) Rowley & Hare, redescri., incl. *Æ. bulbosus* R. & H. (p. 444, pl. xxxiv), (?) *L. hageri* (olim *Actinocr.* et *Batochr.*) McChesney, redescri.

- (p. 445, pl. xxx); *L. longirostris* (olim *Actinocr.* et *Batocr.*) Hall, redescr., incl. *B. casseduyanus* M. & W. (p. 442, pl. xxviii); *L. nashville* (olim *Actinocr.* et *Batocr.*) Hall ex Troost, redescr. (p. 435, pl. xxxi), var. *subtractus*, redescr. (p. 436, pl. xxxi); *L. pyriformis* [errore pro *piriformis*] (olim *Actinocr.*, *Uperocr.* [Typ.], et *Batocr.*) Shum., redescr., incl. var. *rudis* et *Batocr. pistilliformis* M. & W. (p. 437, pl. xxxi), recuperated anal tube (p. 136); *L. yandelli* (olim *Actinocr.* et *Batocr.*) Shum., redescr. (p. 441, pl. xxx); WACHSMUTH & SPRINGER (336).
- L. robustus*, Keokuk group, White's creek Springs, near Nashville, Tenn.; WACHSMUTH & SPRINGER (336) p. 436, pl. xxx.—*L. spiniferus*, Keokuk group, Indian creek, Montgomery Co., Ind. (an *Batocr. marinus* Miller & Gurley ?); *op. cit.* p. 439, pl. xxx: n. spp.
- +*Lyriocrinus*, rediagnosed, includes *Marsupiocr.* Hall non Phill. (p. 261), food-grooves (p. 101); *L. dactylus*, redescr. (p. 262, pl. xi); *L. melissa*, redescr. (p. 263, pl. xi), *L. sculptilis* vel *sculptus* S. A. Miller, syn. of *Diaboloc. vespertalis* (p. 251); *L.*, sp. nondescr., Dudley (p. 217); WACHSMUTH & SPRINGER (336).
- +*Macrocrinus*, n. g., with genotype *M. konincki* (p. 446); *M. carica* (olim *Eretmocr.*) Hall, redescr. (p. 448, pl. xxxvii); *M. gemmiformis* (olim *Eretmocr.*) Hall, redescr. (p. 449, pl. xxxvi); *M. jucundus* (olim *Batocr.*) Miller & Gurley, redescr., incl. *B. agnatus* M. & G. (p. 451, pl. xxx), branched anal tube (p. 136); *M. konincki* (olim *Actinocr.*, *Batocr.*, et *Eretmocr.*) Shum., redescr., incl. *A. urnaeformis* McChes. (p. 447, pl. xxxv); *M. lagunculus* (olim *Batocr.*) Hall, redescr. (p. 453, pl. xxxv); *M. verneuilianus* (olim *Eretmocr.*) Shum., redescr. (p. 450, pl. xxx), circumoral water-ring (p. 102, pl. v), convoluted organ (p. 143, pl. v); WACHSMUTH & SPRINGER (336).
- +*Macrostylocrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 285.—*M. fasciatus*, redescr., may include *Actinocr. (Saccocr.) semiradiatus* Hall (p. 288, pl. xxii); *M. fusibrachiatus*, redescr. (p. 291, pl. xxiii); *M. granulatus*, var. raised to specific rank (p. 289, pl. xxii); *M. meeki*, redescr. (p. 290, pl. xxii); *M. ornatus*, redescr. after Hall's figure (p. 286, pl. xxiii); *M. striatus*, redescr., does not include HALL, 20 Rep. N. Y. State Cat. pl. x, fig. 7 (p. 287, pl. xxxii); WACHSMUTH & SPRINGER (336).
- +*Mariocrinus*; JAMES (146): rediagnosed, with *M. carleyi* as genotype; WACHSMUTH & SPRINGER (336) p. 281.—*M. aureatus*, Miller's description translated (p. 285); *M. carleyi*, redescr. (p. 282, pl. xxii); *M. granulatus* S. A. Miller not a *Mariocr.*, whatever it may be (p. 282); *M. macropetalus* Hall, probably *Corymbocr.* (p. 282); *M. plumosus*, redescr. (p. 284, pl. xxiii); (?) *M. ramosus*, Hall's description translated (p. 284); *M. stoloniferus* Hall, not accepted (p. 282); *M. warreni*, redescr. (p. 283, pl. xxii); WACHSMUTH & SPRINGER (336).
- +*Marsupiocrinoides* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.—+*Marsupiocrinus* Phill. non Blainville nec Hall, rediagnosed, incl. *Cupellacrinus* Troost [nomen preferendum, melius autem *Cypellocrinus*] (p. 730), stem (p. 40), arm-branching (pp. 75, 79), ambulacra (p. 103); WACHSMUTH & SPRINGER (336): systematic position; BATHER (30) pp. 342, 344.—*M. depressus*, ridges on tegmen (p. 118); (?) *M. pramaturus*, redescr. (p. 734, pl. lxxii); *M. radiatus*, ridges on tegmen (p. 118, pl. viii); *M. tennesseensis*, redescr. (p. 731, pl. lxxv); *M. tentaculatus*, redescr. (p. 733, pl. lxxv); WACHSMUTH & SPRINGER (336).
- M. striatus*, Niagara group, Decatur Co., West Tennessee; WACHSMUTH & SPRINGER (336) p. 732, pl. lxxv: n. sp.
- +*Marsupites*, nekton or plankton; BATHER (24), and WALTHER (338) p. 222: in Sweden; SCHLUETER (297) p. 46.—*M. ornatus* [i.e. *M.*

- testudinarius*]; LAMPLUGH (182) pp. 82 & 83; HUME (134) p. 568: at Broitzem (p. 229), general distribution (p. 272); STOLLEY (320): and *M. sp.* in Lüneburg; STOLLEY (319) pp. 147, 176.
- +*Marsupitida*, defined, includes only *Marsupites*; ZITTEL (356) p. 138, and ZITTEL-EASTMAN (357) p. 165.
- +*Megistocrinus*, rediagnosed (p. 532), stem-lumen (p. 46), food-grooves (p. 101); WACHSMUTH & SPRINGER (336).—*M. abnormis*, redescr. (p. 546, pl. xlix); *M. concavus*, redescr. (p. 543, pl. xlviii); *M. depressus*, redescr., incl. *M. ontario* Hall (p. 540, pl. xlix); *M. evansi*, redescr., incl. *Actinocr. brevicornis* Hall, *A. superlatus* Hall, *A. minor* Hall, *M. plenus* White, et *M. parvirostris* M. & W. (p. 533, pl. xlvii), tegmen (p. 119), stem (p. 39), var. *crassus* (p. 536); *M. farnsworthi*, redescr. (p. 539, pl. xlviii); *M. knuppi*, type lost, figures misleading (p. 533); *M. latus*, redescr. (p. 538, pl. xlviii); *M. multidecoratus*, redescr. (p. 542, pl. xlix); *M. nobilis*, redescr., incl. *M. parvus* W. & Sp. (p. 537, pls. xlvii, li), tegmen and relation to ambulacra (p. 119); *M. nodosus*, redescr. (p. 541, pl. xlix); *M. rugosus*, redescr. (p. 542, pl. xlviii); *M. spinosulus*, redescr., incl. *M. pileatus* S. A. Miller (p. 544, pl. xlviii); WACHSMUTH & SPRINGER (336).
- M. indianensis*, Hamilton Group, Charleston, Ind.: MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 27, pl. ii.—*M. waliszewskii*, Lower Devon, Sta. Lucia, Spain; OEHLERT (250) Bull. Soc. geol. France (3) xxiv, p. 818, pl. xxvi: n. spp.
- +*Melocrinidae*, defined, separated into *Melocrinites* and *Dolatocrinites*, with analysis of genera, geol. and geogr. distribution; WACHSMUTH & SPRINGER (336) p. 264: defined, includes *Melocr.* (*Ctenocr.*), *Scyphocr.*, *Xenocr.*, *Corymbocr.*, *Abacocr.*; ZITTEL (356) p. 131: enlarged scope; ZITTEL-EASTMAN (357) p. 146.
- +*Melocrinus*, rediagnosed (p. 292), arm-branching (pp. 76, 78, 86); WACHSMUTH & SPRINGER (336).—*M. aequalis*, redescr. (p. 304); *M. bainbridgensis*, redescr., incl. *M. clarkei* Williams (p. 297, pls. xxii, xxiv); *M. brevidactylus* Hall, not accepted (p. 294); WACHSMUTH & SPRINGER (336).—+*M. gibbosus*?; BEYER (38) p. 89, pl. iii, fig. 72.—*M. nobilissimus*, redescr. (p. 295, pl. xxiii); *M. nodosus* Hall, not accepted (p. 294); *M. obconicus*, redescr. (p. 302, pl. xxii); *M. obpyramidalis* Winchell & Marcy, not accepted (p. 294); *M. pachydactylus*, redescr., incl. *M. paucidactylus* (p. 296, pls. xxiii & xxiv); *M. parvus*, redescr. (p. 303, pl. xxii); *M. pratteni* McChesney, *M. sculptus* Hall, and *M. verneuili* Hall, not accepted (p. 294); WACHSMUTH & SPRINGER (336).
- M. calvini*, Hamilton group, Johnson Co., Iowa; WACHSMUTH & SPRINGER (336) p. 300, pl. xxii.—*M. gracilis*, Hamilton group, Canandaigua Lake, N. Y.; *op. cit.* p. 298, pl. xxii.—*M. oblongus*, Niagara group, near Louisville, Ky., & St. Paul, Ind., separated from *Cytoocrinus levis* Roemer; *op. cit.* p. 300, pl. xxii.—*M. roemeri*, Niagara group, Decatur Co., Tenn., based on *Cytoocrinus levis* Roemer; *op. cit.* p. 301, pl. xxii.—*M. tiffanyi*, Hamilton group, New Buffalo, Iowa; *op. cit.* p. 299, pl. xxii: n. spp.
- +*Mercocrinus*, relations to *Iocrinus* (p. 68), compound RR (p. 71), anals (p. 127); WACHSMUTH & SPRINGER (336).
- M. salopie*, Middleton group of Ordovician, from Mincop, W. Shropshire; BATHER (20) Geol. Mag. (n. s.), Dec. iv, vol. iii, p. 74: should be *salopicus*; JUKES-BROWNE (147): no, it shouldn't; BATHER (22): n. sp.
- +*Mespilocrinus*, base (p. 58), arm-branching (p. 77); WACHSMUTH & SPRINGER (336).
- Metaocrinus*, base and stem; WACHSMUTH & SPRINGER (336), pp. 65, 67.—*M. rotundus*, "Bird's leg" of Japanese fishermen, caught by long line, esp. when baited with live mackerel; IJIMA (137) pp. 42, 45.
- +*Millerocrinus*, proximale (p. 39), base (pp. 53, 60, 61); WACHSMUTH &

- SPRINGER (336).—*M. aculeatus*, and *M. dudressieri*; SCHLUETER (298) p. 495.—*M. echinatus* (Schlotheim) 1820, is made syn. of *M. horridus* d'Orb., 1840; HUG (133) p. 392: name maintained; SCHLUETER (298) p. 495.—*M. escheri*; SCHLUETER (298) p. 496.—*M. granulatus*, stem-fragments; PARONA & BONARELLI (259) p. 78.—*M. horridus*; SCHLUETER (298) p. 495.—*M. milleri*, and *M. münsterianus*; HUG (133) p. 405.—*M. orbignyi*; WACHSMUTH & SPRINGER (336) p. 61.—*M. pilleti*, stem-fragments; PARONA & BONARELLI (259) p. 79.—*M. polydactylus*, base; WACHSMUTH & SPRINGER (336) p. 61.—*M. recubariensis*, redescr. and figd; BATHER (27).—*M. sp.*; KILIAN (157) pp. 678, 682.
- M. meslei*, n. sp. ? Kimeridgian, Djebel Tlalet, S. Tunis; GAUTHIER (98) p. 24, pl. xxxii.—*M.*, n. sp. allied to *M. milleri*, possibly identical with *M. meslei*, Kimeridgian, S. Tunis; loc. cit. : n. spp.
- Monocyclica* Bather, 1893, criticised; WACHSMUTH & SPRINGER (336) pp. 157 & 158.
- +*Mycocrinus*, axial canals; WACHSMUTH & SPRINGER (336) p. 142.
- +*Myrtillocrinus*, orals; WACHSMUTH & SPRINGER (336), p. 89, pl. iii.
- +*Nanocrinus*, asymmetry; WACHSMUTH & SPRINGER (336) p. 159.
- Neocrinoidea* P. H. Carp.; WACHSMUTH & SPRINGER (336) pp. 25, 148.
- +*Ohiocrinus*, compound RR (pp. 71, 158), stem (p. 140); WACHSMUTH & SPRINGER (336).
- +*Ollacrinus*, syn. of *Gilbertsocrinus*; WACHSMUTH & SPRINGER (336) p. 236.
- +*Onychocrinus*, relations to *Dactylocr.* and *Forbesiocr.*; JAEKEL (144) p. 46: arm-branching (p. 77), anal tube (p. 138), stem (p. 43); WACHSMUTH & SPRINGER (336).—*O. diversus*, tegmen (p. 123); *O. ramulosus*, arm-branching (p. 75); *O. ulrichi*, tegmen (p. 123); WACHSMUTH & SPRINGER (336).
- +*Ottawacrinus*, relations to *Heterocrinus* (p. 68), anals (p. 127); WACHSMUTH & SPRINGER (336).
- Palæocrinoidea* W. & Sp.; WACHSMUTH & SPRINGER (336) pp. 25, 148.
- +*Parisocrinus*, stem (p. 45), arm-branching (p. 77), anals (p. 127); WACHSMUTH & SPRINGER (336).
- +*Patelloocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 79.
- Pentacrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 30.
- Pentacrinida*, growth changes in stem discussed; JACKSON (139) p. 228: defined, includes *Pentacr.*, *Metacr.*, *Balanocr.*; ZITTEL (356) p. 144: add *Extracr.*; ZITTEL-EASTMAN (357) p. 173.
- Pentacrinus*, stem (pp. 38, 45, 46), its relations to base (pp. 65, 67), axial cords (p. 141); WACHSMUTH & SPRINGER (336): attached to drifting wood; +WALTHER (338) p. 227.—+*P. amblyscalaris*; HUG (133) p. 405.—+*P. angulatus* Oppel non Quenst.; ROTHPLETZ (282), p. 35.—+*P. bajocensis*, in Bas-Languedoc; ROMAN (281) pp. 40, 47.—+*P. cf. basaltiformis*; ROTHPLETZ (282) p. 34: Bajocian, Caucasus; FOURNIER (85) p. 110.—+*P. bronni*; STOLLEY (320) p. 256: Senonian, Caucasus; FOURNIER (85) pp. 159, 161.—+*P. censoriensis*; HUG (133) p. 405.—+*P. cingulatus*, Oxfordian, Caucasus; FOURNIER (85) p. 118: geogr. distrib., found in Posen; GALLINEK (93) p. 402.—+*P. jurensis*; STEFANO (316) p. 195.—+*P. naresianus*, root; WACHSMUTH & SPRINGER (336) p. 51.—+*P. ornatus*; SCHLUETER (298) p. 946.—+*P. pentagonalis* (incl. *P. sigmaringensis*), geogr. distrib., found in Posen; GALLINEK (93) p. 401.—+*P. aff. peroni*; LORY & SAYN (197) p. 13.—+*P. pilonoti*; ROTHPLETZ (282) p. 35.—+*P. rawsoni*; KOEHLER (163) p. 478.—+*P. cf. scalaris*, Bajocian, Caucasus; FOURNIER (85) p. 110.—+*P. wyville-thomsoni*, locomotion; WACHSMUTH & SPRINGER (336) p. 49.—+*P. sp.*, columnals in molasse of Angles no proof of depth; PELLAT (260) p. 114.
- +*P. miocenicus*, Upper Burdigalian, between St. Etienne-du-Grés and Notre-Dame-du-Château (Bouches-du-Rhône), columnals only, compared

- with *P. mülleri*, *P. sowerbyi*, & *P. gastaldi*; LORIEL (194) Bull. Soc. geol. France (3) xxv, p. 127, pl. iv : n. sp.
- Pentameru* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Periechocrinites*; WACHSMUTH & SPRINGER (336) pp. 362, 366.
- †*Periechocrinus*, rediagnosed, incl. *Trochoer*. Portlock, ? *Pradoer*. Verneuil, *Geocr.* d'Orb., *Saccocr.* Troost-Hall, *Pyxidocr.* (pars) Müller (p. 519), stem-lumen (p. 46); WACHSMUTH & SPRINGER (336).—*P. howardi* (olim *Saccocr.*), S. A. Miller, redescr. (p. 529); *P. infelix* (olim *Megistocr.* et *Saccocr.*) Winch. & Marcy, redescr., incl. *Saccocr. egani* S. A. Miller (p. 525, pl. 1); *P. marcouanus* (olim *Megistocr.* et *Saccocr.*) Winch. & Marcy, redescr. (p. 523, pls. 1 & li); *P. necis*, redescr. (p. 524, pl. 1); ? *P. ornatus* (olim *Saccocr.*) Hall, redescr., incl. *S. benedicti* S. A. Miller (p. 527, pls. 1 & li); *P. speciosus*, redescr. (p. 521, pl. 1); *P. tennesseensis* (olim *Saccocr.*) Hall, redescr., incl. *S. speciosus* Roem. non Hall (p. 528, pl. 1); ? *P. tenuidiscus*, redescr. (p. 531, pls. xlv, li); *P. urniformis* (olim *Saccocr.*) S. A. Miller, redescr. (p. 526, pl. 1); ? *P. whitei*, redescr., incl. *Actinocr. amplius* M. & W. (p. 530, pls. xlv, li); *P. whitfieldi* (olim *Saccocr.*) Hall, redescr., incl. *Actinocr. christyi* Hall non Shum. (p. 522, pl. li), arm-branching (p. 75); WACHSMUTH & SPRINGER (336).
- †*Periglyptocrinus*, n. g., with genotype *P. billingsi*, Trenton limestone, Ottawa, Canada; WACHSMUTH & SPRINGER (336) p. 277, pl. xxi: arms (p. 80) : n. sp.
- P. priscus* (olim *Glyptocrinus*) Bill., redescr.; WACHSMUTH & SPRINGER (336) p. 278, pl. xxi.
- †*Petalocrinidae*, n. fam. (not defined) for *Petalocrinus*, n. g. (not diagnosed) with genotype *P. mirabilis* (p. 167), also *P. (?) major* (p. 170), both from Niagara limestone [near Monticello], Jones Co., Iowa; WELLER & DAVIDSON (341) J. Geol. iv, with figg. : n. spp.
- †*Phialocrinus* Trautschold non Eichw., ? = *Graphiocr.*; WACHSMUTH & SPRINGER (336) p. 80.
- †*Phillipsocrinus* McCoy, an abnormal *Actinocrinoid*; WACHSMUTH & SPRINGER (336) p. 294.
- †*Phimocrinus*, anal tube; WACHSMUTH & SPRINGER (336) p. 136.
- †*Phyllocrinus patelleformis*; KILIAN (157) p. 682.
- †*Physetocrinus*, rediagnosed (p. 593), arms (p. 85), toginen (pp. 109, 120, pl. v); WACHSMUTH & SPRINGER (336).—*P. asper*, redescr. (p. 596, pl. lxiii); *P. copei*, redescr. (p. 598, pl. lxiii); *P. dilatatus*, redescr. (p. 595, pl. lxiv); *P. ornatus*, redescr., incl. *Actinocr. senarius* Hall et A. brittsi S. A. Miller (p. 597, pl. lxiii); *P. ventricosus*, redescr., incl. varr. *subventricosus* McChesney, *cancellatus* Hall, *internodius* Hall, *reticulatus* Hall (p. 593, pls. lxiii & lxiv); WACHSMUTH & SPRINGER (336).
- P. lobatus*, Lower Burlington age, Lake Valley, New Mexico; WACHSMUTH & SPRINGER (336) p. 599, pl. lxiii.—*P. sampsoni*, Burlington group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 14, pl. i : n. spp.
- Pinnastella* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- Pinnata*, suborder of *Articulata*, defined; WACHSMUTH & SPRINGER (336) p. 152.
- †*Pisocrinidae*, defined, includes *Pisocr.* and *Triacr.*; ZITTEL (356) p. 125, and ZITTEL-EASTMAN (357) p. 135.
- †*Pisocrinus*, base (p. 57), compound RR (p. 72), anal tube (p. 136); *P. pilula*, orals (p. 90); WACHSMUTH & SPRINGER (336).
- †*Platycrinidae*, Silurian and Devonian genera discussed, origin of the family; BATHER (30) p. 338: relation of arms to cup (p. 83), origin of fam. (p. 167), redefined, analysis and distribution of genera (p. 642); WACHSMUTH & SPRINGER (336): defined, includes *Platycr.*, *Marsupiocr.*,



- Culicocr.* and *Cordylocr.*; ZITTEL (356) p. 127: also *Coccocr.*; ZITTEL-EASTMAN (357) p. 138.
- +*Platycrinoidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- +*Platycrinus*, rediagnosed and restricted, including *Centrocr.* et *Pleurocr.* Austin, et *Edwardsocr.* d'Orb., ontogeny (p. 647): stem (p. 40), its cirri (p. 41), its axial canal (p. 46), its joint-surfaces (p. 48), base (p. 57), arm-branching (pp. 77, 79), syzygies (p. 84), ambulacra (p. 102, pl. iv), tegmen (pp. 111 & 112), orals (p. 94); WACHSMUTH & SPRINGER (336): N. American spp. discussed; MILLER & GURLEY (232) p. 64.—*P. absentivus* S. A. Miller, not accepted (p. 650); *P. acclivus*, redescrip. (p. 663); *P. æqualis*, redescrip., incl. *P. batiola* S. A. Miller (p. 674, pl. lxxi); *P. æquitermus*, redescrip., incl. *P. curryvillensis* Rowley & Hare (p. 658, pl. lxxi); *P. allophylus*, redescrip. (p. 685, pl. lxxi); *P. altidorsatus* Rowley and Hare, not accepted (p. 650); *P. amabilis* S. A. Miller, not accepted (p. 650); *P. americanus*, redescrip., incl. *P. truncatus* Hall, et ? *P. broadheadi* S. A. Miller (p. 686, pl. lxxv); *P. annosus* S. A. Miller, not accepted (p. 650); *P. asper* M. & W. non Goldf., redescrip. (p. 690, pl. lxxviii); *P. bedfordensis* Hall & White, not accepted (p. 650); *P. blairi* S. A. Miller, not accepted (p. 650); *P. bonoensis*, redescrip., incl. *P. æternalis* et *P. caducus* S. A. Miller (p. 683, pl. lxix); *P. boonvillensis*, redescrip. (p. 681, pl. lxxii); *P. breviodus*, redescrip. (p. 688, pl. lxx); *P. britsi*, redescrip. (p. 659, pl. lxxi); *P. burlingtonensis*, ambulacrals (p. 103), redescrip., incl. *P. inornatus* McChesney, *P. exsertus* Hall, *P. nodobrachiatus* Hall, *P. nucleiformis* Hall, & *P. lautus* S. A. Miller (p. 653, pl. lxix); *P. calyculatus* Hall, not accepted (p. 650); *P. canaliculatus*, redescrip. (p. 689, pl. lxxv); *P. cavius*, redescrip. (p. 715, pl. lxxvii); *P. chouteauensis*, *P. colletti* and *P. concinnus*, all of S. A. Miller, not accepted (p. 650); *P. contritus*, redescrip. (p. 667, pl. lxxi); *P. corbuliformis*, redescrip. (p. 657, pl. lxxi); WACHSMUTH & SPRINGER (336).—*P. crassus*; DORLODOT (71) p. 252.—*P. discoideus*, ambulacrals (p. 103), redescrip., incl. *P. corrugatus* O. & S., *P. striobrachiatus* Hall, *P. multibrachiatus* M. & W., *P. shumardianus* Hall, & *P. pulchellus* S. A. Miller (p. 713, pl. lxvi); *P. eboraceus* Hall, not accepted (p. 650); *P. emivulus*, redescrip. (p. 712, pl. lxxviii); *P. eriensis*, redescrip. (p. 676); *P. excavatus*, redescrip., incl. *P. sulcatus* S. A. Miller (p. 718, pl. lxvi); WACHSMUTH & SPRINGER (336).—*P. formosus*, var., *approximatus*, n. var., Burlington group, Sedalia, Mo.; MILLER & GURLEY (233) p. 60, pl. v.—*P. glyptus*, redescrip. (p. 693, pl. lxxvii); *P. gorbyi*, redescrip. (p. 716, pl. lxxviii); *P. graphicus*, redescrip., incl. *P. richfieldensis* Hall & White (p. 672, pl. lxxi); *P. halli*, ambulacrals (p. 103), redescrip., incl. *P. planus* Hall non Ow. & Shum., et *P. olla* Hall non de Kon. (p. 662, pl. lxxii); *P. haydeni* Meek, not accepted (p. 650); *P. hemisphericus*, redescrip. (p. 703, pl. lxvi); *P. huntsvillæ*, redescrip., incl. *P. penicillus* M. & W., *P. plenus* M. & W., et *P. alabamensis* S. A. Miller (p. 678, pl. lxxiii); *P. incomptus*, redescrip. (p. 664, pls. lxxi & lxxii); *P. insolens*, redescrip. (p. 659, pl. lxxi); WACHSMUTH & SPRINGER (336).—*P. lævis*; DORLODOT (71) p. 252.—*P. lodensis*, redescrip. (p. 666, pl. lxxi); *P. marginatus* Rowley & Hare, not accepted (p. 650); WACHSMUTH & SPRINGER (336).—*P. Münsterianus*; DESTINEZ (66).—*P. notensis*, redescrip. (p. 682, pl. lxxi); *P. ollicula* redescrip. after S. A. Miller (p. 667); *P. ornigranulatus*, redescrip., incl. *P. nodulosus* Hall non Goldf. (p. 701, pls. lxvi, lxxviii); WACHSMUTH & SPRINGER (336).—*P. paradoxus* (olim *Palæchinus*) Eichw., JAEKEL (144) p. 48.—*P. parvinodus*, redescrip.; WACHSMUTH & SPRINGER (336) p. 696, pl. lxxviii.—*P. parvus* Hall referred to *Clematocr.*; JAEKEL (144) p. 47.—*P. pentagonus* S. A. Miller, not accepted (p. 650); *P. pileiformis*, redescrip., incl. *P. carchesium* S. A. Miller (p. 656, pls. lxix & lxx); *P. pisum*, redescrip. (p. 660, pl. lxxi);

- P. plano-basalis* Rowley & Hare, not accepted (p. 650); *P. planus*, redescr., incl. *P. bloomfieldensis* S. A. Miller (p. 668, pl. lxix); WACHSMUTH & SPRINGER (336).—*P. cf. planus*; DESTINEZ (66).—*P. plumosus* Hall, referred to *Clematocr.*; JAEKEL (144) p. 47: see *Cordylocr.*—*P. pocilliformis*, redescr. (p. 706, pl. lxviii); *P. pratteni*, redescr. (p. 671, pl. lxx); *P. pumilus* Hall, not accepted (p. 650); *P. quinquenodus*, redescr., incl. *P. planobasalis* Rowley & Hare (p. 661, pl. lxxi); WACHSMUTH & SPRINGER (336).—*P. ramulosus* Hall, referred to *Clematocr.*; JAEKEL (144) p. 47: vide etiam *Cordylocr.*—*P. regalis*, redescr., incl. *P. oweni* M. & W.; WACHSMUTH & SPRINGER (336) p. 710, pl. lxxii.—*P. retarius*, referred to *Hapalocr.*; BATHER (30) p. 344.—*P. saffordi*, redescr. (p. 694, pl. lxvii); *P. sampsoni*, redescr. (p. 673, pl. lxx); *P. saræ*, redescr., incl. *P. georgei* Hall, *P. prattennanus* M. & W., et *P. monroensis* Worthen (p. 677, pls. lxix & lxx); *P. scobina*, redescr., incl. *P. clytis* Hall (p. 695, pl. lxviii); *P. sculptus*, redescr., incl. *P. rotundus* S. A. Miller (p. 691, pls. lxviii, lxxv); WACHSMUTH & SPRINGER (336).—*P. spissus*; DORLODOT (71) p. 252.—*P. subspinosus*, redescr. (p. 717, pl. lxvi); *P. subspinulosus*, redescr. (p. 684, pls. lxvi, lxx); *P. symmetricus*, ambulacrals (p. 103), ridges on tegmen (p. 118), redescr. (p. 655, pls. iii, lxix); *P. tenuibrachiatus*, redescr. (p. 687, pl. lxx); *P. truncatulus*, redescr. (p. 675, pl. lxvii, lxxi); *P. verrucosus*, redescr. (p. 705, pls. lxvi, lxviii); *P. vexabilis* White, not accepted (p. 650); *P. wortheni*, redescr. (p. 702, pl. lxvii); *P. yandelli*, with var. *perasper*, redescr., incl. *P. nodobrachiatus* Hall 1861 non 1858 (p. 706, pls. lxvi, lxviii), ambulacrals (p. 103); WACHSMUTH & SPRINGER (336).
- P. ugassizi*, Kinderhook group, Le Grand, Marshall Co., Ia., incl. *P. planus* W. & Sp. non Ow. & Shum.; WACHSMUTH & SPRINGER (336) p. 669, pl. lxix.—*P. bozemanensis*, Lower Carboniferous, Bridger Mts., Montana; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 42, pl. iii.—*P. bridgerensis*, *ibid.*, near Bozeman; *op. cit.* p. 43, pl. iii.—*P. concinnulus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 63, pl. iv.—*P. davisii*, Lower Burlington Limest., Hannibal, Mo.; WACHSMUTH & SPRINGER (336) p. 684, pl. lxx.—*P. douglassii*, Lower Carboniferous, Bridger Mountains, Bozeman, Mont.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 86, pl. v.—*P. geometricus*, Upper Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 697, pls. lxvii & lxviii.—*P. hodgsoni*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 63, pl. v.—*P. illinoisensis*, *ibid.*; *op. cit.* p. 62, pl. v.—*P. nodostriatus*, Upper Burlington Limest., Burlington, Ia. (= *P. tenuibrachiatus* pars, M. & W.); WACHSMUTH & SPRINGER (336) p. 698, pls. lxvi, lxx.—*P. peculiaris*, Lower Burlington age, Lake Valley, New Mexico; *op. cit.* p. 700, pl. lxviii.—*P. sharonensis*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 42, pl. iii.—*P. spinifer*, with var. nov. *elongatus*, Lower Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 708, pls. lxvi & lxvii.—*P. subscitulus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 62, pl. iv: n. spp.
- Plicatocrinidae*, defined, includes *Plicatocr.* & *Hyocr.*; ZITTEL (356) p. 143 and ZITTEL-EASTMAN (357) p. 171.
- Polyocrinides* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- Polymera* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- +*Polypeltes*, possibly a Batocrinid; WACHSMUTH & SPRINGER (336) p. 386.
- +*Polypeltidae*, defined, includes *Polypeltes* and *Spyridiocr.*; ZITTEL (356) p. 132: discontinued; ZITTEL-EASTMAN (357) p. 147.

- †*Porocrinus*, considered as link with Cystids (p. 146): related to *Hybocrinus* (p. 67); WACHSMUTH & SPRINGER (336).
- †*Poteriocrinioidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- †*Poteriocrinidae*, tegmen; WACHSMUTH & SPRINGER (336) p. 116: defined, includes *Poteriocr.* (subgen. *Scaphiocr.*, *Hydriocr.*, *Scytaalocr.*, *Decadocr.*), *Woodocr.*, *Zeacr.*, *Celiocr.*, *Hydreionocr.*, *Tribrachiocr.*, *Cromyocr.*, *Agassizocr.*, *Graphiocr.*, *Bursacr.*, *Phialocr.*, *Ceriocr.*, *Asiocr.*, *Delocr.*, *Ulocr.*, *Erisocr.*, *Stemmatocr.*; ZITTEL (356) p. 136: many separated as *Encrinidae*; ZITTEL-EASTMAN (357) p. 160.
- †*Poteriocrinus*, not typical of *Poteriocrinidae* (p. 87), anals (p. 126), anus (p. 137); WACHSMUTH & SPRINGER (336).—*P. clarkel*, var. *alpha*, and *P. cornellianus*; KINDLE (161) p. 34.—*P. crassus*, redescri. from various localities, Central France; JULIEN (151) p. 138, pl. xvii.—*P. (Decadocrinus) gregarius*; KINDLE (161) p. 34.—*P. labyrinthicus* (olim *Cyathocr.*) S. A. Miller, anal area now first described; MILLER & GURLEY (233) p. 34, pl. iv.—*P. missouriensis*, arm-branching; WACHSMUTH & SPRINGER (336) p. 78.—*P. plicatus*, from La Varville; JULIEN (151) p. 138, pl. v.—*P. radiatus*, La Varville, determined by De Koninck; JULIEN (151) p. 137.—*P. spissus*, redescri. from La Varville, determined by De Koninck; *loc. cit.*—*P. stellaris*; BEYER (38) p. 89, pl. iii, fig. 71.—*P. (Decadocrinus) zethus*; KINDLE (161) p. 34.
- P. alberti*, Kaskaskia Group, Monroe Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 29, pl. ii.—*P. arrectarius*, St. Louis Group, Alton, Ill.; *op. cit.* p. 33, pl. iv.—*P. batheri*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Assoc. xiv, p. 377, no fig.—*P. bozemanensis*, Lower Carboniferous, Bridger mountains, Bozeman, Mont.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 82, pl. v.—*P. douglassi*, *ibid.*; *op. cit.* p. 83, pl. v.—*P. lautus*, Keokuk Group, Boonville, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 30, pl. ii.—*P. neglectus*, *ibid.*; *op. cit.* p. 31, pl. iv.—*P. pulaskiensis*, Kaskaskia Group, Pulaski Co., Ky.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 39, pl. iii.—*P. stadiodactylus*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*P. tensus*, *ibid.*; *loc. cit.* no fig.: n. spp.
- †*Pterotocrinus*, rediagnosed, incl. *Asterocr.* Lyon non Münst. (p. 791), arms and branching (pp. 77, 79), their relation to cup (p. 83), tegmen (p. 112); WACHSMUTH & SPRINGER (336).—*P. acutus*, redescri., incl. *P. spatulatus* Wetherby, et *P. rugosus* Ly. & Cass. (p. 799, pl. lxxix); var. *bifurcatus* (p. 801, pl. lxxix); *P. capitalis*, redescri. (p. 794, pl. lxxix), *P. chesterensis*, redescri. (p. 802, pl. lxxix); *P. coronarius*, redescri. (p. 795, pl. lxxix); *P. crassus*, redescri. (p. 801, pl. lxxix); *P. depressus*, redescri. (p. 796, pl. lxxix); *P. pyramidalis*, redescri. (p. 798, pl. lxxix); WACHSMUTH & SPRINGER (336).
- †*Ptychocrinus*; JAMES (146): emended and diagnosed; WACHSMUTH & SPRINGER (336) p. 197.—*P. parvus* (including *P. angularis* and *Reteocrinus gracilis*), redescri. (p. 199, pl. xviii); *P. priscus*, referred to *Periglyptocrinus* (q. v.) (p. 198); *P. splendens*, redescri. (p. 198, pl. xviii); WACHSMUTH & SPRINGER (336).
- Pycnocrinidae* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- †*Reteocrinidae*, defined, with analysis of genera, & discussion; WACHSMUTH & SPRINGER (336) p. 173: defined; ZITTEL-EASTMAN (357) p. 144.
- †*Reteocrinus*; JAMES (146): defined and discussed (p. 176), base (p. 67), tegmen (p. 120); WACHSMUTH & SPRINGER (336).—*R. cognatus*, probably large *R. onealli* (p. 177); *R. fimbriatus*, redescri. (p. 179, pl. ix); *R. gracilis* Wetherby, syn. of *Ptychocr. parvus* (pp. 177, 200); *R. magnificus*, redescri. (p. 181, pl. ix); *R. nealli* (= *onealli*), redescri., interradials discussed (p. 179, pl. ix); *R. stellaris*, redescri. (p. 178, pl. ix), arm-branching (p. 77); WACHSMUTH & SPRINGER (336).

- +*Rhaphanocrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 258.—*R. sculptus* (olim *Glyptocrinus*) S. A. Miller, redescr. (p. 260, pl. x); *R. subnodosus*, redescr. (p. 259, pl. xi); *R. wachsmuthi* Oehlert, "apparently not a typical form" (p. 259); WACHSMUTH & SPRINGER (336).
- +*Rhipidocrinus*; FRECH (88) p. 177: arms and branching (pp. 76, 86); WACHSMUTH & SPRINGER (336).
- Rhizocrinus*, proximale (p. 39), stein (p. 40), its axial canals (p. 46), base (pp. 58, 62); WACHSMUTH & SPRINGER (336).—*R. rawsoni*; KOEHLER (164) p. 101: root; WACHSMUTH & SPRINGER (336) p. 51.
- +*Rhodocrinidae*, redefined, with analysis of genera, geological and geographical distribution; WACHSMUTH & SPRINGER (336) p. 215: defined, includes *Lyriocr.*, *Anthemocr.*, *Rhipidocr.*, *Thylacocr.*, *Ollacr.* (*Goniasteroidocr.*), *Rhodocr.* (*Acanthocr.*); ZITTEL (356) p. 130: add *Archæocr.* and *Diamenocr.*; ZITTEL-EASTMAN (357) p. 145.
- +*Rhodocrinus*, including *Acanthocrinus*, rediagnosed and discussed; WACHSMUTH & SPRINGER (336) p. 218.—*R. asperatus* Bill., a doubtful *Archæocrinus* (p. 254); *R. barrisi*, with var. nov. *striatus*, Upper Burlington, Burlington, Ia., var. *divergens* Hall is only a mature form (p. 230, pl. xii); *R. benedicti*, description translated from S. A. Miller (p. 224); *R. cælatatus* S. A. Miller, syn. of *R. nanus* (p. 228); *R. coxanus*, redescr. (p. 222, pl. xiii); WACHSMUTH & SPRINGER (336).—*R. echinatus* Schloth., see *Millerocrinus*.—*R. gonatodes*, ? = *Diamenocr.*, arms (p. 80), *R. gracilis* Hall, not recognised (p. 220); *R. kirbyi*, redescr., with note on colour of fossils (p. 226, pl. xii), cirri (p. 44); *R. nanus*, redescr. (p. 288, pls. xi & xii), cirri (p. 44); *R. nodulosus*, redescr. (p. 225, pl. xiii); *R. parvus*, redescr. (p. 229); *R. rectus* Hall, not recognised (p. 220); *R. spinosus* and *R. varsoviensis* of Hall, not recognised (p. 220); *R. vesperalis* White, referred to *Diaboloocr.* (p. 251); *R. wachsmuthi*, redescr. (p. 222, pls. xiii, xv); *R. watersianus*, redescr. (p. 221, pl. xii); *R. whitei*, including var. *burlingtonensis* as a large example, redescr. (p. 223, pl. xiii); *R. wortheni*, redescr. (p. 220, pls. xi & xii); *R. wortheni*, var. nov. *urceolatus*, Lower Burlington age, Lake Valley, New Mexico (p. 221, pl. xii); WACHSMUTH & SPRINGER (336).—*R.* (?) sp., cup-plates from Cornwall; COLLINS (54) p. 81, pl. E.
- R. blairi*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 37, pl. ii.—*R. bozemanensis*, Upper Burlington or Lower Keokuk Group, Bridger Mts., near Bozeman, Montana; MILLER & GURLEY (235), Bull. Illinois Mus. xii, p. 40, pl. iii.—*R. bridgerensis*, *ibid.*; *op. cit.* p. 41, pl. iii.—*R. douglassi*, *ibid.*; *op. cit.* p. 39, pl. iii.—*R. truncatus*, Upper Burlington Limestone, Burlington, Iowa; WACHSMUTH & SPRINGER (336) p. 231, pl. xiii.—*R. tuberculatus*, Lower Burlington age, Lake Valley, New Mexico; *op. cit.* p. 232, pl. xiii: n. spp.
- +*Saccocoma*, plankton; WALTHER (338) p. 212.
- +*Saccocomidae*, defined, includes only *Saccocoma*; ZITTEL (356) p. 144, and ZITTEL-EASTMAN (357) p. 172.
- +*Saccocrinus*:—*S. benedicti* S. A. Miller = *Periechoocr. ornatus* (p. 527); *S. egani* S. A. Miller = *Periechoocr. infelix* (p. 525); WACHSMUTH & SPRINGER (336).
- +*Sagenocrinus*, base; WACHSMUTH & SPRINGER (336) p. 58.
- +*Scaphiocrinus*, cirri (p. 44), arm-branching (p. 75), anus (p. 137); WACHSMUTH & SPRINGER (336).
- S. notatus*, Kinderhook Group, Le Grand, Iowa; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 36, pl. ii, n. sp.
- +*Schisocrinus*, columns; WHITEAVES (344) p. 159: arm-branching; WACHSMUTH & SPRINGER (336) p. 77.
- +*Scytalocrinus*, anus; WACHSMUTH & SPRINGER (336) p. 137.
- Semiarticulata* J. S. Miller; WACHSMUTH & SPRINGER (336) p. 13.
- +*Siphonocrinus*, rediagnosed, has 5 not 3 IBB (p. 209), tegmen (p. 122);

- WACHSMUTH & SPRINGER (336).—*S. armosus*, redescribed (p. 211, pl. xix), tegmen (p. 107, pl. xix); *S. nobilis*, redescribed (p. 212, pl. xix); WACHSMUTH & SPRINGER (336).
- S. pentagonus*, Upper part of Niagara group, Racine, Greenfield, and Waukesha, Wisc., and Chicago, Ill.; WACHSMUTH & SPRINGER (336) p. 213, pl. xix, n. sp.
- +*Sphaerocrinus*; FRECH (88) p. 177.
- Sphaeroidocrinoidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- +*Spyridiocrinus*, possibly a Batocrinid; WACHSMUTH & SPRINGER (336) p. 365.
- +*Steganocrinus*, rediagnosed (p. 579), arms and branching (pp. 76, 85), ambulacrals (p. 101), tegmen (p. 110); WACHSMUTH & SPRINGER (336).—*S. araneolus*, redescribed (p. 581, pl. lxi); *S. concinnus*, redescribed, incl. *Actinocr. validus* M. & W. (p. 581, pl. lxi); *S. pentagonus*, second anal tube (p. 136), axial canals in cup (p. 142), redescribed (p. 579, pl. lxi); *S. sculptus*, arm-branching (pp. 75, 78), redescribed (p. 583, pl. lxi); WACHSMUTH & SPRINGER (336).
- S. albersi*, Burlington Group, Burlington, Ia.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 33, pl. ii.—*S. blairi*, Burlington Group, near Sharon, S. W. Missouri; *op. cit.* p. 35, pl. ii.—*S. globosus*, Kinderhook group, Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 585, pl. lxi.—*S. griffithi*, Burlington Group, Burlington, Ia.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 34, pl. ii.—*S. sharonensis*, Burlington Group, near Sharon, S. W. Missouri; *op. cit.* p. 32, pl. ii.—*S. spergenensis*, St. Louis Group, Spergen Hill, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 29, pl. ii: n. spp.
- +*Stelidiocrinus*, rediagnosed, based on *S. capitulum* and *S. laevis* Ang., pl. xv, fig. 20 (p. 279), arm-branching (p. 79); (?) *S. argutus*, redescribed (p. 280, pl. xxiv); *S. laevis* Ang., pl. xxviii, fig. 7 is a *Desmidocr.* (p. 280); *S. ovalis* Ang. is a Rhodocrinid (p. 280); WACHSMUTH & SPRINGER (336).
- +*Stemmatocrinus*, base (p. 59), arms (p. 80), anals (p. 133); WACHSMUTH & SPRINGER (336).
- +*Stephanocrinidae*, defined, includes only *Stephanocr.*; ZITTEL (356) p. 125, & ZITTEL-EASTMAN (357) p. 137.
- +*Stereocrinus*, rediagnosed (p. 324), arm-branching (p. 77); *S. triangulatus*, redescribed (p. 325, pl. xxv); WACHSMUTH & SPRINGER (336).
- S. barrisi*, Hamilton Group, Alpena, Mich., based on *S. triangulatus* Barris pars; WACHSMUTH & SPRINGER (336) p. 326, pl. xxv.—*S. indianensis*, Hamilton Group, near Charlestown, Ind.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 38, pl. iii: n. spp.
- Stomatocrinoidea* W. & Sp.; WACHSMUTH & SPRINGER (336) pp. 25, 148.
- +*Storthingocrinus*, base; WACHSMUTH & SPRINGER (336) p. 57: discussed, placed near *Pisocr.* rather than *Symbathocr.*, structure of base; OEHLERT (250) p. 822.
- S. haugi*, Lower Devon., Sta. Lucia, Spain, supposed [erroneously] not to agree with structure of *S. fritillus* in respect of small basal; OEHLERT (250) Bull. Soc. geol. France (3) xxiv, p. 821, pl. xxvi: n. sp.
- +*Strotocrinus*, rediagnosed, incl. *Calathocr.* (pars) Hall non v. Meyer (p. 637), arms and branching (pp. 76, 85), tegmen (p. 110), convoluted organ (p. 143, pl. v); WACHSMUTH & SPRINGER (336): includes *Teleocr.*; MILLER & GURLEY (232) p. 32.—*S. glyptus*, redescribed (p. 640, pls. lx, lxx); *S. regalis*, stem (p. 39), arm-branching (p. 75), redescribed, incl. *Actinocr. perumbrosus* Hall, *A. speciosus* M. & W., *S. bloomfieldensis* S. A. Miller (p. 638, pl. lxx); WACHSMUTH & SPRINGER (336).
- S. ornatus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 30, pl. ii: n. sp.

*Stylida* C. F. Roem.; WACHSMUTH & SPRINGER (336) p. 17.

†*Symbathocrinidae*, defined, includes *Symbathocr.*, *Phimocr.*, *Stylocr.*, *Stortingocr.*, and *Lageniocr.*; ZITTEL (356) p. 125, and ZITTEL-EASTMAN (357) p. 136.

†*Symbathocrinus*, base (p. 57), orals (pp. 89, 91, pl. iii), muscle-plates (p. 87), anal tube (pp. 136, 157); *S. wachsmuthi*, arm (p. 75); WACHSMUTH & SPRINGER (336).

*S. illinoisensis*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 53, pl. iii: n. sp.

†*Synerocrinus*, n. g., with genotype *Forbesiocrinus incurvus* Trautsch.; JAEKEL (144) p. 47.

†*Talarocrinus*, rediagnosed (p. 781), arms and branching (pp. 77, 79); WACHSMUTH & SPRINGER (336).—*T. cornigerus*, redescri. (p. 783, pl. lxxviii); *T. ovatus*, redescri. (p. 787, pl. lxxviii); *T. sexlobatus*, redescri. (p. 784, pl. lxxviii); *T. simplex* (olim *Dichocr.*) Shum., redescri. (p. 790, pl. lxxviii); *T. symmetricus*, redescri., incl. *Dichocr. elegans* Ly. & Cass. (p. 786, pl. lxxviii); WACHSMUTH & SPRINGER (336).

*T. decornis*, Upper part of St. Louis Group, Tateville, Pulaski Co., Ky., an incl. *Dichocr. constrictus*, M. & W. ?; WACHSMUTH & SPRINGER (336) p. 788, pl. lxxviii.—*T. patei*, Kaskaskia Group, Breckenridge Co., Ky.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 44, pl. iii.—*T. subglobosus*, Upper part of St. Louis Group, Tateville, Pulaski Co., Ky.; WACHSMUTH & SPRINGER (336) p. 789, pl. lxxix: n. spp.

†*Tunaocrinus*, n. g., with genotype *T. typus*, Hudson River Group, Warren Co., O. (p. 185, pl. ix), base (p. 67); WACHSMUTH & SPRINGER (336): n. sp.

†*Taxocrinida*, types of arm-branching; JAEKEL (144) p. 46.

†*Taxocrinus*, stem (p. 43), base (p. 58), anal tube (p. 138), arm-branching (p. 77), tegminal food-grooves (p. 101, pl. iii), orals (p. 93, pl. iii); WACHSMUTH & SPRINGER (336).—*T. curtus*; KINDLE (161) p. 34.—*T. intermedius*, ridges on tegmen; WACHSMUTH & SPRINGER (336) p. 118, pl. iii.—*T. ithacensis* (p. 33), var. *alpha* (p. 34); KINDLE (161).—*T. macroductylus*; WHIDBORNE (342) p. 377.—*T. multibrachiatatus*, var. *colletti* White, made a distinct sp. of *Tuxocr.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 56.—*T. thomei*, anals and interbranchials; WACHSMUTH & SPRINGER (336) p. 139.

*T. splendens*, Keokuk Group, Crawfordsville, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 61, pl. v.—*T. (?) stultus*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*T. ungula*, Keokuk Group, Crawfordsville, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 59, pl. v: n. spp.

†*Technocrinus*, rediagnosed (p. 304); *T. andrewsi*, redescri. (p. 306, pl. xxiv); *T. spinulosus*, redescri. (p. 305, pl. xxii); *T. striatus* (p. 305); WACHSMUTH & SPRINGER (336).

†*Teleiocrinus*, rediagnosed, incl. *Calathocr.* Hall pars, non v. Meyer, & *Strotocrinus*, sect. B, M. & W. (p. 626), arms (p. 85), ambulacra (p. 102, pl. iv), convoluted organ (p. 143, pl. v); WACHSMUTH & SPRINGER (336): considered syn. of *Strotocr.*; MILLER & GURLEY (232) p. 32.—*T. altheu*, redescri. (p. 632, pls. lx, lxiii); *T. liratus*, redescri., incl. *Actinocr. subumbrosus* Hall (p. 633, pl. lx); *T. rudis*, tegmen (p. 107, pl. v), redescri., incl. *Actinocr. clivorus* Hall, A. (*Calathocr.*) *erodus* Hall, A. (*Calathocr.*) *insculptus* Hall (p. 630, pl. lix); *T. tenuiradiatus*, redescri. (p. 634, pl. lix); *T. umbrosus*, abnormal base (p. 56), second anal tube (p. 136), redescri., incl. *Actinocr. aegilops* Hall, et A. *delicatus* M. & W. (p. 628, pls. lix & lx); WACHSMUTH & SPRINGER (336).

*T. adolescents*, Lower Burlington Limest., Burlington, Ia., an incl. *Actinocr.*

- penicillus*, M. & W. ?; WACHSMUTH & SPRINGER (336) p. 635, pl. lix : n. sp.
- Tessellata* Joh. Müller (p. 15), of Zittel (p. 23); WACHSMUTH & SPRINGER (336).
- Tetramera* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Thallocrinus*, discussed, a syn. of *Hapalocrinus* (q. v.); BATHER (30) p. 343.—*T. retiarius*, referred to n. g. *Clematocr.*; JAEKEL (144) p. 47.
- Thaumatocrinus*, interradials (p. 72), interbrachials (p. 117), anals (p. 139); WACHSMUTH & SPRINGER (336).
- †*Thiolliericrinus flexuosus*, *T. Heberti*, Tithonian, Bas-Languedoc; ROMAN (281) pp. 88, 331.
- †*Thylacocrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 248.
- T. darkei*, Hamilton group, Canandaigua Lake, N. Y.; WACHSMUTH & SPRINGER (336) p. 248, pl. xiii : n. sp.
- †*Thysanocrinidae*; ZITTEL-EASTMAN (357) p. 145 : (= *Glyptasteridae*) [= *Dimerocrinidae*], defined, analysis of genera, distribution, affinities; WACHSMUTH & SPRINGER (336) p. 188.
- †*Thysanocrinus*, 1852, substituted for *Dimerocrinus*, 1836, and including *Glyptaster* and *Eucrinus*, defined; WACHSMUTH & SPRINGER (336) p. 190.—*T. brachiatus* (olim *Glyptaster*), redescr. (p. 195, pl. xviii); (?) *T. halli* (olim *Rhodocr.*), redescr. (p. 196, pl. xiii); *T. inornatus* (olim *Glyptaster*), redescr., infrabasals discussed (p. 193, pls. xviii & xix); WACHSMUTH & SPRINGER (336).—*T. immaturus*, see *Idiocrinus*.—*T. liliiformis*, redescr. (p. 192, pl. xviii); *T. occidentalis* (olim *Glyptaster*), redescr., its var. *increbrescens* not admitted (p. 194, pl. xviii); WACHSMUTH & SPRINGER (336).
- T. milligane*, Niagara group, Decatur Co., Tenn.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 51, pl. iii : n. sp.
- †*Tiaracrinus*; WACHSMUTH & SPRINGER (336) p. 146.
- †*Trematocrinus*, syn. of *Gilbertsocr.* (p. 237); *T. papillatus* Hall, mere variation of *Gilbertsocr. typus* (p. 243); WACHSMUTH & SPRINGER (336).
- †*Triacrinus*, base; WACHSMUTH & SPRINGER (336) p. 57.
- †*Tribrachiocrinus*, compound radials [!]; WACHSMUTH & SPRINGER (336) p. 158.
- Trimeru* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Turbinocrinus* Hall ex Troost, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.
- †*Uintacrinidae*, defined, includes only *Uintacr.*; ZITTEL (356) p. 138, and ZITTEL-EASTMAN (357) p. 165.
- †*Uintacrinus*, horizon and locality in Kansas; WILLISTON (348) p. 110: distribution; BATHER (25): nekton or plankton; WALTHER (338) p. 222.—*U. socialis*, redescr., origin of genus discussed; BATHER (24): colony of young, Elkader, Kansas; WILLISTON (349) p. 242.—*U. west-falicus*, believed identical with *U. socialis*; *op. cit.* p. 243.
- †*Ulocrinus*, anals; WACHSMUTH & SPRINGER (336) p. 133.
- †*Xenocrinus*; JAMES (146): redefined, interradials discussed (p. 182), base (p. 67); WACHSMUTH & SPRINGER (336).—*X. baeri*, redescribed (p. 185, pl. ix); *X. penicillus*, redescribed, interradials discussed (p. 183, pl. ix); WACHSMUTH & SPRINGER (336).
- †*Zeacrinus*, base; WACHSMUTH & SPRINGER (336) p. 52.—*Z. excavatus* Schultze, referred to *Dactylocr.*; JAEKEL (144) p. 47.
- Z. doverensis*, Kaskaskia group, Dover Hill, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 35, pl. ii.—*Z. kentuckiensis*, Kaskaskia group, Pulaski Co., Ky.; *op. cit.* p. 37, pl. ii.—*Z. peculiaris*, *ibid.*; *op. cit.* p. 34, pl. ii : n. spp.
- †*Zophocrinus*; WACHSMUTH & SPRINGER (336) p. 146.

## (G.)—+CYSTIDEA.

Defined and restricted by removal of *Amphoridea* (p. 443), classified (p. 551); HAECKEL (116).—Defined (p. 72), and classified (p. 73), system (p. 77), structure discussed (p. 78); the genera of Barrande "Syst. Silur. de Bohême" vol. vii referred to genera, sub-families, and families of Haeckel (p. 166); HAECKEL (118).—Haeckel's definition discussed; GREGORY (109) p. 128.—Classification; JAEKEL (143).

General account and synopsis of chief genera; KOKEN (171) p. 288.—General account, no Orders recognised, but Families *Aristocystidae*, *Camarocystidae*, *Echinospharitidae*, *Cryptocrinidae*, *Caryocrinidae*, *Anomalocystidae*, *Callocystidae*, *Agelacriniidae*; ZITTEL (356) p. 148, and ZITTEL-EASTMAN (357) p. 177.

*Acanthocystida*, sub-fam. nov. of *Palæocystida*, for *Acanthocystis* and *Archæocystis*; HAECKEL (118) p. 64.

*Acanthocystis*; HAECKEL (117) p. 402: redefined; HAECKEL (118) p. 70: "has long been preoccupied among Protozoa by Carter" [to be precise, since 1863]; GREGORY (109) p. 133.—*A. briareus*, redescribed; HAECKEL (118) p. 71, pl. i.

*Achradocystis*, redefined and made to include *Cyclocrinus* Eichw. [which is no Echinoderm], *A. grewingkii*, redescribed; HAECKEL (118) p. 56.

*Agelacriniidae*, defined, includes *Agelacr.* (subgen. *Lepidodiscus*, *Hemicystis*, *Cytaster*, *Edriaster*), *Mesites*, *Asteroblustus*, † *Tiaracr.*; ZITTEL (356) p. 157, and ZITTEL-EASTMAN (357) p. 187.

*Agelacrinus*; HAECKEL (117) p. 401: redefined (p. 112); *A. buchanianus*, referred probably to *Edriocystis* (p. 113); *A. dicksoni* (p. 113); *A. vorticellatus*, redescribed (p. 112, pl. iii); HAECKEL (118).

*Agelacystida* or *Agelacriniida*; HAECKEL (117) p. 401.—*Agelacystida*, fam. nov., including sub-fam. *Hemicystida* and *Asterocystida*; HAECKEL (118) pp. 77, 107.

*Agelacystis*, n. g., with genotype *A. hamiltonensis* [which unfortunately is genotype of *Agelacrinus*]; HAECKEL (117) p. 401, & (118) p. 114, pl. iii.

*Amorphocystis*, n. g., with genotype "*Caryocystis testudinarius*, v. Buch." [non Hisinger] and including *C. pumilus*, Eichw.; JAEKEL in KOKEN (171) p. 411, footnote: name unnecessary, Review in Nat. Sci.

*Amphoracystis*, n. g., with type *A. irregularis* (olim *Deutocystis*) Barr., described and figured; HAECKEL (118) p. 52.

*Amphoræa*, hypothetical ancestral genus; HAECKEL (118) p. 31.

*Amphoralia*, subclass of *Amphoridea* (= *Amphoridea bilateralia*); HAECKEL (116) p. 429: defined; HAECKEL (118) p. 12.

*Amphoridea*, removed from Cystidea as a new Class, defined (p. 423), their system in a table (p. 430); HAECKEL (116): proposed as Class; HAECKEL (117) p. 394: defined (p. 9), classified (p. 11); HAECKEL (118).

*Amphoronia*, subclass of *Amphoridea* (= *Amphoridea monaxonia*); HAECKEL (116) p. 429: defined; HAECKEL (118) p. 12.

*Amygdalocystis*, redefined, *A. florealis*, redescribed; HAECKEL (118) p. 106.

*Anomalocystidae* defined, includes *Trochocystis*, *Mitrocystis*, *Anomalocystis*, *Balanocystis*, *Dendrocystis*, *Pleurocystis*; ZITTEL (356) p. 156, & ZITTEL-EASTMAN (357) p. 185.

*Anomocystida* or *Pleurocystida*; HAECKEL (117) p. 398.—*Anomocystida*, defined as including *Anomalocystida* and *Pleurocystida*, and fully discussed; HAECKEL (118) pp. 12, 33.

*Anomocystis*, nom. nov. pro *Anomalocystis* Hall; HAECKEL (117) p. 398: redefined; HAECKEL (118) p. 40.—*A. cornuta*, and *A. disparilis*, redescribed; HAECKEL (118) p. 41, pl. ii.

*Anthocystida*, sub-fam. nov. of *Callocystida*; HAECKEL (118) p. 129.



- Anthocystis*, n. g., with genotype *A. halliana*, Niagara group, N. America, based on Hall's pl. I, figg. 1-11 [which really represent the type of *C. jewetti*, genotype of *Callocystis*]; HAECKEL (118) p. 132: n. sp.
- Apiocystida*, sub-fam. nov. of *Callocystida*; HAECKEL (118) p. 129.
- Apiocystis*; HAECKEL (117) p. 401: redefined (p. 132); *A. elegans* (p. 133); *A. pentremitoides*, redescribed (p. 132, pl. iii); HAECKEL (118).
- Aporita*, criticised; HAECKEL (118) p. 19.
- Arachnocystis*; HAECKEL (117) p. 397: redefined (p. 64); *A. infausta*, redescribed (p. 65, pl. i); HAECKEL (118).
- Archæocystida* or *Protamphorida*, hypothetical family; HAECKEL (117) p. 396.
- Archæocystis*, nom. nov., hypothetical genus; HAECKEL (117) p. 396: redefined, and *A. medusa* described; HAECKEL (118) p. 71, pl. i.
- Aristocystida* or *Caryocystida* Haeckel non Neunayr (= *Holocystida*); HAECKEL (117) p. 397: defined and discussed; HAECKEL (118) pp. 12, 45.
- Aristocystidae*, defined, includes *Aristocystis*, *Deutocystis*, *Craterina*, *Pyrocystis*; ZITTEL (356) p. 152, & ZITTEL-EASTMAN (357) p. 182.
- Aristocystis*; HAECKEL (117) p. 397: redefined, and *A. bohémica* redescribed; HAECKEL (118) p. 50, pl. ii.
- Ascocystida* or *Ascothuria*, fam. nov.; HAECKEL (117) p. 402, & (118) pp. 77, 119.
- Ascocystis*; HAECKEL (117) p. 402: defined and discussed (pp. 121, 124); *A. draboviensis* (p. 125); HAECKEL (118).
- Asteroblastus*, redefined, and *A. stellatus*, redescribed, and compared with *A. volborthi*; HAECKEL (118) p. 117, pl. iii.
- Asterocystis*, n. g., with genotype *A. tuberculata* (olim *Asteroblastus*) Schmidt; HAECKEL (118) p. 116, pl. iii.
- Asterocystida*, sub-fam. of *Agelacystida*; HAECKEL (118) p. 111.
- Astroblastus*; HAECKEL (117) p. 401.
- Astrocystites*, n. g. [posterior to *Asterocystis* HAECKEL, v. supra], with genotype *A. ottawaensis*, Trenton Limest., Division St., Ottawa, "most nearly related to *Asteroblastus*"; WHITEAVES (345) p. 287, and figg.: n. sp.
- Atelocystida*, sub-fam. nov. of *Anomocystida*; HAECKEL (118) p. 37.
- Atelocystis*; HAECKEL (117) p. 398: redefined; HAECKEL (118) p. 41.
- A. gegenbauri*, Upper Silurian, Wenlock Limestone, Dudley [syn. of *Placocystis forbesianus*]; HAECKEL (118) p. 42, pl. ii: n. sp.
- Calix* Rouault, syn. of *Craterina*; HAECKEL (118) p. 54.
- Callocystida* or *Apiocystida*; HAECKEL (117) p. 401.—*Callocystida*, redefined, incl. sub-famm. *Anthocystida*, *Apiocystida*, and *Pseudocrinida*; HAECKEL (118) pp. 77, 125.—*Callocystidae*, defined, includes *Pseudocr.*, *Lepadocr.*, *Apiocystis*, *Callocystis*, & *Hybocystis*; ZITTEL (356) p. 156, & ZITTEL-EASTMAN (357) p. 186.
- Callocystis*; HAECKEL (117) p. 401: redefined, and *C. jewettii* redescribed on basis of Hall's pl. I, figg. 12-18 [which Hall expressly makes a var. and not the type: see *Anthocystis*] (p. 131, pl. iii), *C. multipora* (p. 132); HAECKEL (118).
- Camarocystidae*, defined, includes *Camarocr.* & *Lichenocr.*; ZITTEL (356) p. 154, & ZITTEL-EASTMAN (357) p. 183.
- Caryocrinidae*, defined, includes *Hemicosmites*, *Caryocr.*, *Echinoencr.*, *Glyptocystis*, *Homocystis*, *Minocystis*; ZITTEL (356) p. 155, & ZITTEL-EASTMAN (357) p. 184.
- Caryocrinus*, redefined; HAECKEL (118) p. 143.—*C. ornatus*, redescribed; HAECKEL (118) p. 144, pl. iv: coil of gut inferred from sections; JAEKEL (142) p. 31.
- C. hammelli*, Niagara Group, Madison Co., Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 65, pl. v.—*C. milliganæ*, Niagara Group, Decatur Co., Tenn.; *op. cit.* p. 63, pl. v: n. spp.

- Caryocystis*; HAECKEL (117) p. 397: redefined; HAECKEL (118) p. 59.—*C. alutacea*, vide sub *Heliopirum*.—*C. geometrica* and *C. granatum*, vide sub *Heliocrinum*.—*C. ovalis*, vide sub *Heliopirum*.—*C. prominens*, vide sub *Heliocrinum*.—*C. tenuistriata*, vide sub *Heliopirum*.—*C. testudinaria*, Buch et Auctt. [non Hisinger], redescribed; HAECKEL (118) p. 59, pl. ii: made type of n. g. *Amorphocystis*; JAEKEL in KOKEN (171) p. 411, footnote.
- C. angelini*, based on Angelin, pl. xiii, figg. 4–9 [which represent the original specimen of Hisinger, to which the name *testudinarius* is (quite erroneously) applied by all authors, Haeckel included; *angelini* therefore becomes genotype: see Zool. Rec. 1893]; HAECKEL (118) p. 59: n. sp.
- Chirocrinus*, syn. of *Glyptocystis*; HAECKEL (117) p. 402.
- Citrocystida*, sub-fam. nov. of *Palaeocystida*, for *Echinosphæra*, *Citrocystis*, and *Palaeocystis*; HAECKEL (118) p. 64.
- Citrocystis*, n. g., with type *Citrocystis citrus* (olim *Sphaeronites*) Hisinger; HAECKEL (118) p. 68, pl. i.
- Comarocystida*, sub-fam. nov. of *Palaeocystida*; HAECKEL (118) p. 64.
- Comarocystis*; HAECKEL (117) p. 397: redefined, and *C. punctata* redescribed; HAECKEL (118) p. 70, pl. i.
- Craterina*, incl. *Calix* Rouault, redefined, and *C. bohémica*, incl. *C. excavata* BART., redescribed; HAECKEL (118) p. 54.
- Crinocystis chrysalis* Hall, doubtfully referred to *Palaeocystis*; HAECKEL (118) p. 69.
- Cryptocrinidae*, defined, includes *Cryptocr.*, *Echinocystis*, *Porocr.*, *Hypocr.*; ZITTEL (356) p. 154, and ZITTEL-EASTMAN (357) p. 184.
- Cryptocrinus*, redefined (p. 146), and *C. cerasus*, redescribed (p. 147); HAECKEL (118).
- Crystullocystis* Haeckel (= "*Echinosphæra sensu strictissimo*!"); HAECKEL (118) p. 66. [? n. g.]
- Cyathocystis*, redefined, and *C. plautinae*, redescr.; HAECKEL (118) p. 115.
- Cystidea concomitans*, vide *Stromatocystis*.
- Cystoblastus*, as ancestor of *Blastoidea*; JAEKEL (141): redefined, and *C. leuchtenbergii* redescribed; HAECKEL (118) p. 130.
- Decamphora*, nom. nov., hypothetical ancestor of hypothetical *Protamphora*; HAECKEL (118) p. 33.
- Dendrocystis*; HAECKEL (117) p. 397: redefined (p. 54), and *D. sedgwicki* redescribed (p. 55, pl. ii); HAECKEL (118).
- Deutocystis*; HAECKEL (117) p. 397: redefined, and *D. modesta* redescribed; HAECKEL (118) p. 51, pl. ii.
- Diploporita*, criticised; HAECKEL (118) p. 19.
- Discocystis*, nom. nov. pro *Echinodiscus* Worthen & Miller non Agassiz; GREGORY (109) p. 131.—*D. optatus* is an Agelacrinid, and the genus is of doubtful validity; BATHER (31).
- Echinocystis*; BATHER (31).—*Echinocystis* Hall non Wyv.-Thoms., redefined; HAECKEL (118) p. 146.—*E. armata* (olim *Echinoencrinus*) Forbes, made type of *Echinocystis* Hall [with which it is not congeneric, and already is type of *Schizocystis* Jaekel]; HAECKEL (118) p. 146.
- Echinoencrinus*, syn. of *Glyptocystis*; HAECKEL (117) p. 402.—*E. baccatus*, referred to *Echinocystis*; HAECKEL (118) p. 146.
- Echinosphæra*; HAECKEL (117) p. 397: redefined; HAECKEL (118) p. 66.—*E. baltica* and *E. aranea*, vide sub *Heliocrinum*.—*E. aurantium*; JAEKEL (143) p. 389: redescribed; HAECKEL (118) p. 67, pl. i.
- Echinosphæritidae*, defined, includes *Echinosphæra*, *Arachnocystis*, *Caryocystis*, *Orocystis*, *Palaeocystis*; ZITTEL (356) p. 154, and ZITTEL-EASTMAN (357) p. 183.
- Edriocystis*, nom. nov. pro *Edrioaster*; HAECKEL (118) p. 133.—*E. bigsbyi* (olim *Edrioaster*), redescribed; HAECKEL (118) p. 118, pl. iii.

- Enneacystis*, n. g., with genotype *E. buchiana*, based on *Caryocr. ornatus* with 9 brachioles, Ordovician, Russia; HAECKEL (118) p. 143, pl. iv: n. sp.
- Ecocystida* (= *Protamphorida*), defined (p. 12): defined and classified "als heuristische Hypothese"; HAECKEL (118) p. 30.
- Ecocystis* Haeckel non Billings nec Walcott, hypothetical ancestral genus; HAECKEL (118) p. 31.
- Eucystis*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 99.—*E. raripunctata*, redescribed; HAECKEL (118) p. 100.
- Fungocystida* or *Glyptosphaerida*; HAECKEL (117) p. 401.—*Fungocystida*, fam. nov., including sub-famm. *Glyptosphaerida* and *Malocystida*; HAECKEL (118) pp. 77, 101.
- Fungocystis*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 104.—*F. rarissima*, redescribed, with restored figure, showing tentacles; HAECKEL (118) p. 105.
- Glyptocystida* (= *Caryocrinida* pars); HAECKEL (117) p. 402: redefined, including sub-famm. *Hexalacystida* and *Sycocystida*; HAECKEL (118) pp. 77, 136.
- Glyptocystida*, coil of gut inferred from varying positions of anus; JAEKEL (142) p. 34.
- Glyptocystis* (= *Chirocrinus*); HAECKEL (117) p. 402: redefined, incl. *Chirocrinus* Eichw.; HAECKEL (118) p. 150.—*G. cf. logani*; GARDINER, REYNOLDS, & REED (95) pp. 524, 538.—*G. multipora* Billings referred to *Callocystis*; HAECKEL (118) p. 132.—*G. pennigera*, redescr.; HAECKEL (118) p. 150, pl. iv.—*G. sp.*, plates; WHITEAVES (344) p. 159.
- Glyptosphaera*; HAECKEL (117) p. 401: redefined, and *G. leuchtenbergi*, redescribed; HAECKEL (118) p. 103.
- Gomphocystis*; HAECKEL (117) p. 401: redefined, and *G. tenax* redescribed; HAECKEL (118) p. 115, pl. iii.
- Haplocystis* Roem., referred to *Lepidodiscus*; HAECKEL (118) p. 113.
- Haploporita*, criticised; HAECKEL (118) p. 19.
- Heliocrinum*, subgen. nov. of *Heliocystis* for *Caryocystis granatum*, *Echino-sphaera baltica*, *E. aranea*, *Caryocystis prominens*, and *C. geometrica*; HAECKEL (118) p. 58.
- Heliocrinus*, vide sub *Heliocystis*.—*H. radiatus*, vide sub *Heliopirum*.
- Heliocystis*, nom. nov. pro *Heliocrinus* Eich., redefined, and *H. radiata* redescribed; HAECKEL (118) p. 58, pl. ii.
- Heliopirum*, subgen. nov. of *Heliocystis* for *Heliocrinus radiatus*, *Caryocystis ovalis*, *C. tenuistriata*, and *C. alutacea*; HAECKEL (118) p. 59.
- Hemicosmites*, redefined; HAECKEL (118) p. 141.—*H. piriformis*, redescribed; HAECKEL (118) p. 142, pl. iv.
- Hemicystida*, subfam. of *Agelacystida*; HAECKEL (118) p. 110.
- Hemicystis*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 111.—*H. granulata*, redescribed; HAECKEL (118) p. 112, pl. iii.
- Hexalacystidu* (= *Caryocrinida*), subfam. nov. of *Glyptocystida*; HAECKEL (118) p. 140.
- Hexalacystis*, n. g., with genotype *H. verrucosa* (olim *Hemicosmites*) Eichw., redescribed; HAECKEL (118) p. 142, pl. iv.
- Holocystis* Hall non Lonsdale (*Megacystis* Hall); HAECKEL (117) p. 397: redefined, and *H. cylindrica* redescribed; HAECKEL (118) p. 60.
- Homocystis*; HAECKEL (117) p. 402: redefined; HAECKEL (118) p. 149.—*H. altera*, redescribed; HAECKEL (118) p. 150, pl. iv.
- Hypocrinus*, redefined, and *H. schneideri*, redescribed; HAECKEL (118) p. 147.
- Lapillocystis fragilis*, referred to *Palamphoridae*; HAECKEL (118) p. 33.
- Lepadocrinus*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 134.—*L. gebhardi*, redescribed; HAECKEL (118) p. 135, pl. iii.—*L. quadri-fasciatus*, restored figure; BATHER (28) p. 101.

- Lepidodiscus*, redefined, incl. *Haplocystis*, and *L. cincinnatiensis* redescribed; HAECKEL (118) p. 113.
- Lichenocystis*, nom. nov. pro *Lichenoides* "da dieser Name bereits verbraucht war" [where? when? by whom?], and *L. prisca* (olim *Lichenoides*) Barr. redescribed; HAECKEL (118) p. 148, pl. iv.
- Lichenoides priacus*; JAHN (145) pp. 685, 691, 697, 719, 740, 752: redescribed, referred to *Caryocrinidae*; POMPECKJ (268) p. 502, pl. xiii.
- Lysocystis*; BATHER (31).
- Macrocytella*; HAECKEL (117) p. 402.—*M. mariae*, referred to *Mimocystis* or *Homocystis*?; HAECKEL (118) p. 149.—*M. bavarica* (olim *Cystidea*) Barr.; POMPECKJ (269) p. 90.
- Malocystis*; HAECKEL (117) p. 401: redefined, and *M. munchisoni* redescribed; HAECKEL (118) p. 105.
- Megacystis*, vide sub *Holocystis*.
- Megaplacta* (= *Parcystidea*), ord. nov.; HAECKEL (118) p. 77.
- Mesites*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 118.—*M. pusireffskii*, redescribed; HAECKEL (118) p. 119.
- Microplacta* (= *Eucystidea*), ord. nov.; HAECKEL (118) p. 77.
- Mimocystis*; HAECKEL (117) p. 402: redefined, incl. *Macrocytella* Callaway [which is 10 years older]; HAECKEL (118) p. 149: considered syn. of *Macrocytella*; POMPECKJ (269) p. 90.—*M. bohémica*, redescribed; HAECKEL (118) p. 149, pl. iv.
- Mitrocystis*; HAECKEL (117) p. 398: redefined, and *M. mitra* redescribed; HAECKEL (118) p. 43, pl. ii.
- M.*, (?) n. sp., *Paraloxides* beds on the Studená hora, N. of Tejšovic, Bohemia, also at Pod trním; POMPECKJ (268) p. 504, pl. xiv: this is the fossil described by Jahn (48) Zool. Rec. 1894 as "Eine andere neue Cystideengattung"; JAHN (145) pp. 660, 691.
- Orocystida*, subfam. nov. of *Aristocystida*; HAECKEL (118) p. 49.
- Orocystis*; HAECKEL (117) p. 397: redefined; HAECKEL (118) p. 56.—*O. helmhackeri*, redescribed; HAECKEL (118) p. 57.
- Palæocystida* or *Echinosphærida*, s. str.; HAECKEL (117) p. 397: (= *Archæocystida*), defined (p. 12), defined, skeleton described (p. 61), classified (p. 64); HAECKEL (118).
- Palæocystis*; HAECKEL (117) p. 397: redefined; HAECKEL (118) p. 69.
- P. pentolena*, Ordovician, Canada; HAECKEL (118) p. 69, pl. i: n. sp.
- Palamphora*, nom. nov., hypothetical ancestral genus; HAECKEL (117) p. 396, and (118) p. 33.
- Palmacystis*, n. g., with genotype *Palmacystis palmata*, based on "Hydrophores palmées," Ordovician, Bohemia; HAECKEL (118) p. 151, pl. iv: n. sp.
- Pentactæa*, hypothetical ancestral genus; HAECKEL (117) p. 396, and (118) p. 32.
- Phacocystis* Haeckel, quoted as syn. of *Pseudocrinus*, from HAECKEL (117) [but the name does not occur in *loc. cit.*]; HAECKEL (118) p. 135.
- Pirocystida*, sub-fam. nov. of *Aristocystida*; HAECKEL (118) p. 49.
- Pirocystis*, nom. bene emend. pro *Pyrocystites* Barr., redefined, and *P. pirum* redescribed; HAECKEL (118) p. 53, pl. ii.
- Placocystida*, sub-fam. nov. of *Anomocystida*; HAECKEL (118) p. 37.
- Placocystis*, redefined (incl. *Anomalocystis* Woodw.), and *P. crustacea*, noni. mut. pro *Anomalocystis* vel *Anoplura* [Enoploura] vel *Atelocystis balanoides* Meek, redescribed, with restored fig.; HAECKEL (118) p. 39.—*P. forbesianus*, redescribed, under name *Atelocystis gegenbauri*, n. sp.; HAECKEL (118) p. 42: H. Woodward's old figure modified and with a new legend; BATHER (28) p. 102.
- Pleurocystida*, combined with *Anomalocystida*, as sub-fam.; HAECKEL (118) pp. 33, 37.

- Pleurocystis*; HAECKEL (117) p. 398: redefined, and *P. filitexta*, redescribed; HAECKEL (118) p. 44, pl. ii.
- Pomocystida* (= *Sphaeronitida* pars); HAECKEL (117) p. 401: fam. nov. including sub-fam. *Sphaeronitida* and *Proteocystida*; HAECKEL (118) pp. 77, 94.
- Pomocystis*, n. g., with genotype *P. uva* (olim *Sphaeronis*) Ang. and including *P. sulcifera* and *P. minuta* Ang. sp.; HAECKEL (117) p. 401, and (118) p. 99.
- Pomonites*, n. g., with genotype *P. pentactæa*, Ordovician of Scandinavia; HAECKEL (118) p. 96: n. sp.
- Pomosphaera*, n. g., with genotype *P. oblonga* (olim *Sphaeronis*) Ang.; HAECKEL (118) p. 99.
- Protamphora*, nom. nov., hypothetical ancestor of hypothetical *Palamphora*; HAECKEL (117) p. 396, and (118) p. 33.
- Proteocystis*; HAECKEL (117) p. 401: redefined, and *P. flava* redescribed; HAECKEL (118) p. 100.
- P. barrandena*, based on Barrande, pl. xxx, figg. 23–26, Lower Devon., Bohemia; HAECKEL (118) p. 101: n. sp.
- Protocrinus*; HAECKEL (117) p. 401: redefined, and *P. fragum* (incl. *P. oviformis* Volb. pars), and *P. oviformis* Eichw. redescribed; HAECKEL (118) p. 104.
- Pseudocrinitida*, sub-fam. nov. of *Callocystida*; HAECKEL (118) p. 129.
- Pseudocrinus*; HAECKEL (117) p. 401.—*P. bifasciatus*, redescribed; HAECKEL (118) p. 135, pl. iii.—*P. oblongus*, referred to *Staurocystis*, and *P. quadrifasciatus* made type of *Staurocystis*; HAECKEL (118) p. 134.
- Psolocystis*, nom. nov., genus hypotheticalum, with genotype *P. decanema*, species hypotheticala, belonging to *Aecocystida*; HAECKEL (118) p. 124.
- Pyrocystis*; HAECKEL (117) pp. 397, 402 [vide *Pirocystis*].
- Rhombifera*, called *Rhomboporita* and then criticised; HAECKEL (118) p. 19.
- Scolocystis*, nom. nov. pro *Echinocystis* Hall non Thomson; GREGORY (109) p. 133: but was preocc. by *Lysocystis* S. A. Miller; BATHER (31).
- Sphaerocystis*; HAECKEL (117) p. 401: redefined, and *S. multifasciata*, redescribed; HAECKEL (118) p. 133, pl. iii.
- Sphaeronites*; HAECKEL (117) p. 401: redefined and restricted, includes *S. pomum*, *S. globulus*, *S. ovalis*; *S. pomum*, redescribed; HAECKEL (118) p. 98.—*S. pyriformis*, Keisley Limestone; REED (276) p. 82.
- Sphaeronitida*, defined, includes *Sphaeronis*, *Glyptosphaera*, *Protocr.*, *Fungocystis*, *Proteocystis*, *Holocystis*, *Eucystis*, *Gomphocystis*; ZITTEL (356) p. 153, and ZITTEL-EASTMAN (357) p. 182.
- Staurocystis*, n. g., with genotype *S. quadrifasciata* (olim *Pseudocrinus*); HAECKEL (118) p. 134, pl. iii.—*S. oblonga* (olim *Pseudocr.*); loc. cit.
- Staurosoma rarum* Barr., doubtfully referred to *Staurocystis*; HAECKEL (118) p. 134.
- Stephanocystis*, hypothetical genus (also called *Stephanamphora*); HAECKEL (117) p. 396.
- Stromatocystis*, n. g. (p. 505), with genotype *S. pentangularis*, n. sp. (p. 506), Cambrian of Pod trním near Tejšovic, Bohemia, perhaps incl. *Cystidea concomitans*, Barr.; POMPECKJ (266) Jahrb. geol. Reichsanst. xlv, pl. xiii.—*S. pentangularis* is the fossil described by Jahn (48) Zool. Rec. 1894 as "Eine neue...Cystideengattung (mit dem *Agelacrinus* noch am nächsten verwandt) in zwei Formen"; JAHN (145) pp. 660, 691, 752.
- Sycocystida*, subfam. nov. of *Glyptocystida*; HAECKEL (118) p. 141.
- Sycocystis* (= *Echinoencrinus*); HAECKEL (117) p. 402: redefined, incl. *Echinoencrinus* pars, and *Gonocrinus* Eichw.; HAECKEL (118) p. 145.—*S. angulosa*, incl. *Echinoencrinus senckenbergi* et *E. striatus*, redescribed; loc. cit.

- Thuriocystis*, nom. nov.; HAECKEL (117) p. 402: genus hypotheticalum, with genotype *T. pentadecalis*, species hypothetica, belonging to *Ascocystida*; HAECKEL (118) p. 124.
- Tiarocrinus quadrifrons*, doubtfully referred to *Staurocystis*; HAECKEL (118) p. 134.
- Trigonocystis*, n. g., with type *T. trigona*, incl. *Trochocystis bohémica*, Barr. var. pl. iii, figg. 29-38, Cambrian, Bohemia; HAECKEL (118) p. 38, pl. ii: n. sp.
- Trinemacystida*, subfam. nov. of *Palæocystida*, for *Arachnocystis* and *Trinemacystis*; HAECKEL (118) p. 64.
- Trinemacystis*, n. g., with type *T. triactis* (3-rayed var. of *Echinosphæra aurantium*), perhaps incl. *E. gyllenhali* Quenst., Ordovician, Scandinavia; HAECKEL (118) p. 65: n. sp.
- Trochocystis*; HAECKEL (117) p. 398: redefined; HAECKEL (118) p. 38.—*T. bohemicus* of Jahn (48) Zool. Rec. 1894, p. 271, is *Stromatocystis*; JAHN (145) p. 660, see also pp. 697, 701, 719, 731, 732, 740, 743, 745, 742: various plates; POMPECKJ (268) p. 503, pl. xiii: redescribed; HAECKEL (118) p. 38.

## (H.)—+BLASTOIDEA.

- Defined (p. 452), classified (p. 460): Order I. *Eublastoidea* or *Pentremitaria* (*Codonasterida*, *Orophocrinida*, *Elæocrinida*, *Pentremitida*). Order II. *Parblastoidea* or *Astrocrinaria* (*Eleutherocrinida*, *Astrocrinida*); HAECKEL (116).
- General account; KOKEN (171) p. 286.—General account, classification follows Etheridge & Carpenter; ZITTEL (356) p. 158: with additional notes by Wachsmuth; ZITTEL-EASTMAN (357) p. 188.
- Blastoidea, derived from *Cystoblastus*; JAEKEL (141): relations to Cystidea, *Blastoidocrinus*, *Asteroblastus*, and *Astrocystis* (Whiteaves non Hæck.); WHITEAVES (345) p. 291.
- Codaster jessicae*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 89, pl. v, n. sp.
- Orophocrinus fusiformis*, restored figure; BATHER (28) p. 101.
- Pentremitidea*, diagrammatic restoration (p. 835, fig. 11).—*P. sp. ?eifelensis*, described, section across theca (p. 831), *P. cf. gilbertsoni*, described, section of hydrospires (p. 829, pl. xxvi); OEHLERT (250).

## (K.)—+INCERTÆ SEDIS.

- "Spheroidal bulb, of nodose, sculptured plates"; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 46, pl. ii.
- Spatangopsis*, see under IV, C.



# XV. VERMES.

BY

FLORENCE BUCHANAN, B.Sc.

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## INTRODUCTION.\*

THE titles of papers relating to the HEMICHORDA and ROTIFERA are again given apart from the rest and will be found on pp. 44 and 46, respectively, of this record.

There has been a lively dispute during the year with regard to the homologies of several of the organs in the different members of the group *Hemichorda* and in the larva of *Phoronis*; but our actual knowledge of the group has also been added to by the discovery and description of new forms of the *Balanoglossus* group by WILLEY (276) & HILL (269), and a careful account of the anatomy of *Cephalodiscus* and of the *Actinotrocha*-larva of *Phoronis* by MONTGOMERY (271).

Our knowledge of the nature of, and the conditions for producing, the different kinds of eggs in the *Rotifera* is furthered by the work of ERLANGER & LAUTERBORN (284), and NUNBAUM (290). JENNINGS in his elaborate memoir on the early development of *Asplanchna* (286) gives important evidence against the purely mechanical theory of cleavage.

No work on the *Mesozoa* is recorded this year.

By far the most important systematic work on the *Polychæta* published during the year is that of EHLERS on the Hamburg collections (67). It is of especial value because the author has taken the trouble to compare his specimens with the original ones of Grube and Kinberg before identifying them with their species, and he has thus been able to correct, or modify, the descriptions of the latter author and to point out errors in his figures; and also on account of the excellent figures by which his own descriptions of 36 new species are accompanied. The same author (68) has reported on some polychætes from E. Africa, shewing the identity of some of them with Mediterranean or W. Indian species. With regard to the systematic of separate families: MÉSNIL's discovery of a new genus, and description of 4 other spp. (2 new), intermediate between the *Maldanidæ* and *Arenicolidæ* shews the close connection that exists between these two families (169-III). A new Maldanid is also described by LEWIS (150). MÉSNIL (169-II) has some further remarks to make on the *Sponidæ*; he would remove 2 species of *Aonides* from this family and place them, as a new genus, amongst the *Cirratulidæ*, and he would create a new family intermediate between the *Sponidæ* and *Chaetopteridæ* for the genera *Disoma* and *Pacilochætus*. He would also introduce *Otenodrilus* into the family *Cirratulidæ* as a retrograde species which has lost all power of sexual reproduction (171). Together with CAULLERY he has made a study of the genus *Spirorbis*, from 28 representative species, 12 new species are described, and the morphology, phylogeny and geographical distribution of the genus, together with its position in the family to which it belongs, is ably dealt with (173). Another new species of the genus is described by SCHIVELEY (222). A new Capitellid is also described by MÉSNIL (168).

For those who are working systematically at the *Polychæta* a note giving the year 1822 as the date of publication of Savigny's "Annélides" in the "Description de l'Égypte" is worth recording (see P. zool. Soc. London, 1897, p. 695).

The most important contribution to our knowledge of the internal anatomy of the *Polychæta* is FAUVEL's beautifully illustrated work on the *Ampharetidæ* (76). In connection with what he has to say on the relations

\* The Recorder regrets having been unable to obtain some of the memoirs published during the year. Amongst these may be mentioned those on the Fauna of L. Balaton, which contain descriptions of several new species. [See Nos. 252, 245, 208, 63, and 281.] It is hoped that these, and also other memoirs whose titles are not here referred to, will be fully recorded next year.

of the genera to one another should be read BIRULA's views on the members of the family occurring in the Black and Caspian Seas and their relations to one another and to the arctic species (15). ARWIDSSON (6) gives a much wished-for account of the internal anatomy of 2 genera of *Glycerida*. FAUVEL, having discovered a 2nd specimen of *Eupolyodontes cornishii* is able to give the histology of the peculiar branchia-like filaments on the back of this Acoëtid and to describe its pharynx and jaws (74). He has also studied the vascular system of the *Amphictenidae* (75). SCHREINER (224) details the histological structure of the eyes in the different families of Errant annelids; GOODRICH (91) describes the interesting nephridia and ciliated organs of *Hesione*, *Tyrrhena* and *Nephtys*; CANTACUZÈNE (46) the different phagocyte organs, some of them regularly arranged in each segment, in *Nephtys*, *Glycera*, *Arenicola* and *Spirographis*. GOODRICH (92) contributes to our knowledge of the internal anatomy of the interesting genus *Sternaspis*.

As regards the *Gephyrea*: GRUVEL & KUNSTLER (98) give an account of the history of the "urns" and of what they term "enigmatical vesicles" in the coelomic fluid of *Sipunculus*, evidently considering them independent organisms. A more detailed account with figures is promised. A pigment, to which the name of "*thalussein*" is given, occurring in a new British Echiuroid is reported on, and compared with known pigments, by Sherrington, Noel Paton and Miss Newbigin in HERDMAN's paper (105). The mode of occurrence and optical properties of the pigments *chatopterin* and *bonellin* is discussed by LANKESTER (144) who gives Engelmann's measurements of the absorption spectra of both.

Interesting new *Oligochaeta* are described by MICHAELSEN (175 & 176), BEDDARD (9), BENHAM (10), ROSA (213) to (216), EISEN (70), FEDARB (77) and SMITH (232). The physiology of the group has been carefully studied by CUÉNOT (59) in 15 species (5 of them freshwater) and in a *Branchiobdella*, with especial reference to glycogen- and fat-storing cells, the coelomic corpuscles, the blood corpuscles, the dorsal pores, and organs for excretion; the mode of attacking parasites by phagocytes is also described. EISEN (70) describes what appear to be auditory cells in a *Pontoscolex*; and the minute anatomy of dorsal vessel and cardiac body in *Enchytræids* is shortly described by RAKOWSKI (205) and (192).

Interesting experimental observations have been made to determine the causes of self-amputation in earthworms, and in a marine worm, by HESCHELER (106), and its relation to asexual reproduction is discussed by GIARD (86), see also MICHEL (177), p. 313. MORGAN (187) and MICHEL (177) recount experiments on the power of regeneration of lost parts in earthworms which confirm those of Hescheler published last year. KORSCHOLT (137) finds this power much greater than the other authors referred to, the discrepancy being apparently due to the remarkable fact that small pieces of a worm regenerate more complete new heads than larger ones. JOEST (127) has also observed self-amputation and has made a number of experiments with sewing together different parts of earthworms either of the same or of different species. In this way double headed or double tailed monsters were sometimes produced. MORGAN (187) gives the results of a few similar experiments. A specimen of a Cirratulid with a second tail, not artificially produced, is described by MÉNIL & CAULLERY (170). Methods of producing abnormalities in Planarians are described by RANDOLPH (206), whose experiments shewing the enormous regenerative power in these animals are also of interest. The histological processes involved in regeneration are made the subject of important memoirs by HESCHELER (107), the re-development of the central nervous system and the stomadeum in *Lumbricus* being especially dealt with; and by HEPEKE (104) for the *Naidæ*. v. WAGNER (256) confirms Hescheler's account of the reformation of the stomadeum for *Lumbricus*. HESCHELER points out the



*Filaroides*, *Spiroxys* and *Gongylonema*. CAMERANO (45) has one on the *Gordiidae* for which group he proposes a new classification (see also 44), and he describes new species (42 & 43), as does also JÄGERSKIÖLD (120). The excretory organs of nematodes have been investigated experimentally by METALNIKOFF (174) and NASSONOW (189), lymphatic glands by NASSONOW (191); the structure of the œsophagus is described by JÄGERSKIÖLD (119).

Several papers on the maturation and cleavage of the egg have appeared for which see for the Polychæta Nos. 50, 51, 52, 166, 250 & 251, for Myzostoma No. 262, for Nemertines No. 147, for Polyclads Nos. 139 & 79, for Nematodes Nos. 226 & 245, and for Rotifers Nos. 284, 286, 294.

## I. TITLES.\*

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2. \*——. (2) On the growth of the ovarian ovum in *Chaetognaths* (Prelim. Note). Annot. Zool. Japon, i, pp. 77-81, pl. iv.
3. ALBARRAN, J. & BERNARD, L. Sur une tumeur épithéliale d'origine parasitaire (*Bilharzia hæmatobia*). C.R. Soc. Biol. (10) iv, pp. 645-647.
4. ANDREWS, E. A. Spinning in *Serpula* eggs. Amer. Natural. xxxi, pp. 818-20.
5. APÁTHY, S. Die Beschaffenheit und Funktion der Halsdrüsen von *Hirudo medicinalis*, mit Rücksicht auf die klinische Verwendung ihres Sekretes. SB. Siebenburg. Ver., Medicin. Abth. xix, pp. 37-77, pls. iv-vi. See Biol. Centrbl. xviii, No. 6, p. 218.
- ARNONE. [See COLUCCI & ARNONE (56).]
6. ARWIDSSON, J. Zur Kenntniss der Gattungen *Glycera* und *Goniada*. Bih. Svenska Ak. xxiii, Afd. iv, No. 6, 30 pp., 2 pls.
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11. BENSLEY, R. R. Two forms of *Distomum cygnoides*. Centrbl. Bakter. (1) xxi, pp. 326-331, pl. ii.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

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20. —. (4) Hirudinées des Indes néerlandaises. Weber's Zool. Ergebn. in Niederl. Ost-Indien, iv, pp. 332-355, 11 figg. in text.
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27. —. (2) Note préliminaire sur des parasites de quelques Hirudinées. T. c. pp. 203-207, 1 pl.
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38. \*BROWN, T. R. Studies on Trichinosis. Bull. Johns Hopkins Hosp. Med. Soc. viii, No. 73.
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## II. BIOLOGY.

(OF ANNELIDS, PLATYHELMINTHES AND NEMATHELMINTHES.)

### GENERAL.

Anatomy and histology of the *Ampharetidae*; FAUVEL (3): of *Eupolyodontes cornishii*; FAUVEL (1).—Anatomy of the genus *Spirorbis*, external and internal asymmetry in 20 different species from different parts of the world; MÉSNIL & CAULLERY (4): of *Spirorbis borealis*; SCHIVELEY.

Structure of *Epibdella hippoglossi*; SCHÖTT.

Anatomy of *Distomum patellare*, n. sp.; STURGES.

General anatomy of Nemertines; BURGER; JOUBIN.

Anatomy and systematic of 2 new species of Rhabdocœl planarians; CALANDRUCCIO: of *Ctenoplana*; WILLEY (1): of *Heteroplana*, a very asymmetrical new genus of the Archiplanoidea; WILLEY (2).

Monograph of *Filaria* and *Spiroptera*; STOSSICH (2): of the *Gordiidae*; CAMERANO (4).

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Right-handed and left-handed twisting in different species of *Spirorbis*, greater development of chætæ on the concave side in each case; MÉSNIL & CAULLERY (4) p. 219.

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A new Echiuroid Gephyrean with very thick gelatinous pigment-containing layer underlying the epidermis; HERDMAN.

Epithelium of Cestodes represented by branching cells which can be distinguished by staining, and by their relation to the cuticle, from the parenchyme cells; BLOCHMANN: see also BOTT who is criticised by BLOCHMANN.

Peculiar curved refractive bodies in the epithelium of a nemertine; MONTGOMERY.

Remarkable unicellular glands in integument of a Rhabdocel planarian consisting almost entirely of nucleus; HASWELL.

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Of *Ampharetidae*, with histology of muscles; FAUVEL (3) pp. 59-65, 144, &c.

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Arrangement of muscles in different species of Tricladæ and their histological structure; JANDER.

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Mouth in asexually-produced *Chaetogaster* at first paired; BOCK.

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Functions of different parts of alimentary canal in leeches; KOWALEWSKY.

A new Polyclad with the alimentary canal opening to the exterior by pores; PLEHN.—Pharynx-epithelium of Tricladæ and its development from the ordinary epithelium of the embryo; regeneration of pharynx after injury; JANDER.

œsophagus of nematodes and its dorsal gland; JÄGERSKIÖLD (1).

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"Urns" and "enigmatical bodies" in the cœlomic fluid of *Sipunculus*, discussion as to whether they are to be regarded as separate organisms or not; GRUVEL & KUNSTLER.

Cœlomic corpuscles, and dorsal pores in *Oligochætes* and the functions thereof; CUÉNOT (1).

Phagocyte organs—amœbocytes and special cœlomic epithelium cells in each segment—in *Polychætes*; CANTACUZÈNE.—Lymphatic glands in *Ascarids*; NASSONOW (3).

Different kinds of connective-tissue cells in *Nemertines*, and the presence or absence of body cavity; MONTGOMERY (2).

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Vascular system of *Nemertines*, valves in the vessels of *Tetrastemma gracense*; BÖHMIG (2).

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Genealogical tree to shew the relation of the parasitic platyhelminthes to one another and their derivation from Rhabdocœl Turbellarians; LONNBERG.

Relations of Nemertines to other animals, especially to Turbellarians; LEBEDINSKY (2).—Classification of Nemertines, agreeing with Bürger; JOUBIN: of Metanemertines, criticising Bürger; MONTGOMERY (2).

New classification of the Nemathelminthes proposed: dividing them according to the form of the lateral field when present, those in which this contains an excretory vessel forming the family *Secernentes*, those in which it contains no vessel the *Resorbentes*, and those forms which have no lateral fields at all forming a third family *Pleuromyaria*; v. LINSTOW (3).

New classification of *Gordiidae*:—their relation to the Nemathelminthes; CAMERANO (3).

## HABITS, &amp;c.

Tube-building in *Ampharetidae*; FAUVEL (3) p. 25.

Commensalism and symbiosis of Polychætes in different parts of the world; GRIFFIN & HARRINGTON, and HARRINGTON.

Self-amputation in earthworms; HESCHELER (1), JOEST, MICHEL (5), MORGAN: in marine worms; HESCHELER (1): in Planarians; RANDOLPH.

Tenacity of life in earthworms; JOEST, WEIR.—Resistance to drought of aquatic oligochætes and leeches in Mexico; SEURAT.—Habits of *Bipalium kewense*; HOGG.

Phosphorescence in Polychætes; MCINTOSH (2.—1): in earthworms; LLOYD-BOZWARD.

Egg-laying in *Sagitta*, at different hours of the day in different species; KENYON (1).

## PARASITES.

Of Polychætes: a new Copepod parasitic on *Polycirrus aurantiacus*; BRUMPT.—Effects of *Monstrillidae* on their hosts in causing wounds and possibly thus assisting in the process of fission; GIARD (1) & (2).—Three Sporozoa parasitic in *Capitella capitata*; CAULLERY & MÉSNIL (1).—A new parasite in the gregarines parasitic in *Spio*; CAULLERY & MÉSNIL (2).

Of leeches: Protozoa parasites; BOLSIUS (2).—Green algæ parasitic in oviducts of *Epidella hippoglossi*; SCHÖTT.

A glugeid (*Pleistophora* sp.) infesting the *Brachycoelium* sp. living inside the shells of *Donax* and *Tellina*; LÉGER.

Seven species of Infusoria commensal on Oligochætes, Polychætes and Planarians; CRAIG.—Phagocytosis in Oligochætes; CUÉNOT (1).

Life-history of Ciliated "urns" of *Sipunculus* and of certain "enigmatical vesicles" also found in the coelomic fluid; GRUVEL & KUNTZER.



## METHODS.

Methylene blue method in Trematodes; BETTENDORF.

For histology of *Ampharetidae*; FAUVEL (3) p. 10.

For eggs of Polyclads; FRANCOTTE.

On collecting and preserving land-planarians; STEEL (1).

## III. DISTRIBUTION.

## 1. GEOGRAPHICAL.

## (a) MARINE FORMS.

Distribution of *Ampharetidae*; FAUVEL (3), pp. 22, 140, &c., BIRULA (1) & (2): of *Spirorbis*; MÉSNIL & CAULLERY (4), p. 227: of Polychætes in general; EHLERS (1), pp. 9-12.

*Arctic Ocean.*

Gulfs of Yenesei and Obi: Polychætes; BIRULA (2).

Spitzbergen: Polyclads; PLEHN.

Baffin Bay and Davis Straits: 2 spp. of Chætognaths (1 new); AURIVILLIUS.—Surface plankton; VANHÖFFEN.

Coasts of Greenland: Polychætes; VANHÖFFEN: *Spirorbis*; MÉSNIL & CAULLERY (4).

*Atlantic Ocean (East).*

Surface plankton of N. Atlantic, North Sea & Davis Straits; VANHÖFFEN.

Rockall: a new Polynoid (*Evarne*); MCINTOSH (2.—2).

Faroe Channel: Polychætes; FOWLER.

Moray Firth: *Dactylocotyle palmatum* on gills of the Ling; SCOTT.

British Coasts: the species of Pholoë; MCINTOSH (2.—3).—L.M.B.C. district: Polychætes; HORNEILL: Turbellarians; JAMESON.

Coast of Ireland: Polychætes; MCINTOSH (1).

English Channel: a new species of Polydora; MÉSNIL (2): a new Capitellid; MÉSNIL (1).—Polychætes of Villers, 30 spp.; SAINT-JOSEPH.

North Sea: Triclad; BERGENDAL (1).

Coast of Norway: 3 Polynoids, 1 new: comparison with British species; MCINTOSH (2.—4).

Coast of Sweden: Leeches; JOHANSSON.

Mediterranean: 2 new species of sinistral *Spirorbis*; MÉSNIL & CAULLERY (4).

Hydrobiological investigations at the mouths of the great rivers in the S. of Russia; OSTROUMOFF (1).

Black Sea: The species of *Amphicteis*, Gr.; BIRULA (1).—Sea of Azof (G. of Taganrog): a new species of *Amphicteis*; OSTROUMOFF (1).

Caspian Sea: 4 (? 5) species of *Amphictenidae* recognised, viz.: *Amphicteis brevispinis*, Gr. and (?) *A. kowalewskii*, Grimm., *Hypania invalida*, Gr., *H. oculata*, Schm. and *H. antiqua*, Ostr.; these compared with the arctic species and with those of the Black Sea; BIRULA (1).

*Atlantic Ocean (West).*

E. Coast of U. S. A.:—In sand-flat of one of the tributaries of Vineyard Sound: a new *Clymene*, with large number of segments; LEWIS.—Newport (R.-I.), Wood's Holl (Mass.), and Sea Isle (N. J.): marine nemertines of shallow water, notes on anatomy; MONTGOMERY (4).—Synopsis of the 9 American species of *Chaetognatha*; KENYON (2).

*Indian Ocean.*

Zanzibar Coast: Polychætes, 22 spp. (2 new); EHLERS (2) & (3).

*Pacific Ocean (West).*

New Caledonia; *Eupolyodontes cornishii*, Buch., which only known from W. coast of Africa before; FAUVEL (1).

Japan: Chaetognaths of Misaki Harbour; AIDA.

*Pacific Ocean (East).*

Puget Sound: Several Polychætes, a few Gephyreans, Nemertines, and Turbellarians, and a *Sagitta*, none of them identified specifically; GRIFFIN & HARRINGTON.—A new species of Polychæte (*Nereis*) associated with hermit-crabs, points of resemblance between Pacific- and Atlantic-coast commensal species; HARRINGTON.

Monterey Bay: a new Polyclad; PLEHN.

Panama: 2 new species of *Spirorbis*; MÉSNIL & CAULLERY (4).

*Southern Oceans.*

Coasts of Patagonia round Cape Horn: Polychætes, 70 spp. (24 new), absence of *Amphinomidae*, *Hesionidae*, and *Amphictenidae*, and of genus *Eunice*; EHLERS (1).—6 new spp. of sinistral *Spirorbis*; MÉSNIL & CAULLERY.

Near Falkland Is.: Polychætes, 4 spp. (3 new); EHLERS (1).

S. Georgia: Polychætes, 24 spp. (13 new); EHLERS (1).

Kerguelen: Polychætes, 21 spp.; EHLERS (1).

**(b) LAND AND FRESH-WATER FORMS.***Palæarctic Region.*

British Isles:—Yorkshire: List of Earthworms; HODSON.—Lincolnshire: the land-planarian; KEW.

Neighbourhood of Paris: Oligochæt; RICHARD.

Cantons of Vaud and Geneva: Turbellarians (*Rhabdocæls*, 12 gen. and 24 spp., and 2 uncertain spp.; *Alloicæls*, 3 gen. and 3 spp.; *Dendrocæls*, 4 gen. and 7 spp.); DU PLESSIS.—Alpine Lakes: Leeches and *Gordiidae*; BLANCHARD & RICHARD.

The Campagna Romana: 7 spp. *Echinorhynchus* (2 new); CONDORELLI-FRANCAVIGLIA.

Sicily: Brackish sand of Faro, Messina, 2 new spp. of *Rhabdocæls*; CALANDRUGGIO.

Brooks of Mountains of W. Central Germany: distribution of 3 species of *Planaria*; VOIGT.

Austro-Hungary:—Bohemia: Oligochætes, a leech, turbellarians, and nematodes, from the Schwarz-See; FRITSCH & VAVRA.—Galicea: Oligo-

chætes; NUSBAUM.—The Tatra Lakes: 22 Nematodes, 4 Turbellarians, and 2 Oligochætes; DADAY (1).—Hungary: free-living fresh-water nematodes, 64 species enumerated and briefly described; DADAY (2).—L. Balaton: Turbellarians; SZIGETHY: Oligochætes; VÁNGEL: Nematodes; DADAY (3): Earthworms of Austro-Hungary, Bulgaria and Roumelia, 3 new species; ROSA (2).

Neighbourhood of Moscow: Turbellarians; ZYKOFF.

C. Verde Is.: a new species of *Acanthodrilus*; ROSA (3).

Japan: Parasites of Ruminants; JANSON (1): New genus of leech; BLANCHARD.

### *Oriental and Australian Regions.*

India: Earthworms; FEDARB.

Dutch E. Indies:—Leeches, 14 species; BLANCHARD (2) & (4).—Celebes: Land-planarians, 21 spp. (19 new), predominance of Australian genera over Oriental; v. GRAFF (2).

Sumatra: a new Moniligastrid of the genus *Desmogaster*; ROSA (1).

Singapore, Borneo, Philippines: Earthworms; BENHAM.

Australia: Land-planarians; STEEL.

New Britain: new species of *Perichæta*; BENHAM.

New Zealand: Land-planarians, 12 spp. (4 new); DENDY.—A Prorhynchid Turbellarian from deep wells; HASWELL.

Fiji Islands: Land-planarians; STEEL (2).

Loyalty Is.: a peculiar new planarian belonging to the ARCHIPLANOIDEA; WILLEY (2).

### *Ethiopian Region.*

East Africa:—Polychætes; EHLERS (2) & (3): Leeches; BLANCHARD (1): Turbellarians; BÖHMIG (1): parasitic nematodes and a cestode larva; COLLIN: parasitic cestodes, 7 spp. (4 new), trematodes, 3 spp. (all new) and nematodes, 4 spp. (1 new); SETTI.

South Africa:—Earthworms belonging to the genus *Acanthodrilus*, and to a new genus of *Eudrilidæ*; absence of *Benhamia*; BEDDARD: 2 n. spp. of *Microchæta*; ROSA (4).

Madagascar:—Earthworms; MICHAELSEN (2): Nemathelminthes (including 1 new sp. of *Mermis*); v. LINSTOW (1).

Seychelle Islands: Earthworms; MICHAELSEN (2).

West Africa:—a new *Gordius* from Cameroon; JÄGERSKIÖLD (2): Leeches; BLANCHARD (1): new genus of *Eudrilidæ*; BEDDARD.

Cape Colony: Earthworms—all *Acanthodrilus*, s. str.—9 new species; BEDDARD.

### *Neotropical Region.*

Straits of Magellan: Polychætes; EHLERS (1): Oligochætes (indigenous and imported species); MICHAELSEN (2).

Argentine Republic and Bolivia: 2 fresh-water planarians (1 new); BORELLI: Land-planarians, 6 spp. (5 new); v. GRAFF (1): *Gordiida*, 5 species (1 new); CAMERANO (2).

S. Brazil: a giant Geoscolecoid; MICHAELSEN (1).

Ecuador and neighbouring region: *Gordiida*, 3 species (1 new); CAMERANO (1).

Columbia: a *Criodrilus* with peculiar genital region; MICHAELSEN (1).

W. Indies:—Oligochætes; MICHAELSEN (1). *Bipalium kewense* at Kingston, Jamaica, Amer. Nat. xxxi, p. 155.

Central America: new species of *Pontoscolex*; EISEN.

*Nearctic Region.*

United States:—Washington: New species of *Megascolides*; SMITH.—Illinois: Turbellaria; WOODWORTH.—Nebraska: animal Parasites; WARD (1) & (2).

Greenland: Oligochætes, Turbellarians and Nematodes; VANHÖFFEN.

## 2. GEOLOGICAL.

Silurian: of Tasmania, Polychætes; ETHERIDGE.

## 3. IN OR ON OTHER ORGANISMS.

*Mammals.*

In Man.—Entozoa of man in Normandy; SPALIKOWSKI. Intestinal parasites of children in Holland; OVERDUIN. *Tæniarhynchus saginatus* in a child; ROCHEBRUNE. List of recorded cases of occurrence of *Cysticercus cellulose* in man; PARONA & CUNEO. *Echinococcus multilocularis* in the Tyrol; POSSELT. Urine parasites of man in S. Africa; STRUBE. Eggs of *Bilharzia hæmatobia* causing cancer of bladder in man at Cairo; ALBARRAN & BERNARD. Life history of *Anchylostomum duodenale*; LOOSS. *Filaria loa* in eye; LUDWIG.

In other Mammals: Nematodes and *Echinorhynchus* in several different mammals; v. LINSTOW (1). Cattle of Cochin China: liver infested by *Amphistoma explanata*; RAILLIET & GOMY. Ruminants of Japan: animal parasites; JANSON (1). Lambs: 2 species of *Strongylus* causing anæmia; JULIEN. *Mustela*: skull bored through by worms; LANDOIS. Boar: a rare nematode; COLUCCI & ARNONE. Pig: an *Ankylostomum*; v. LINSTOW (3): 3 other nematodes; PIANA: 2 trematodes and 5 nematodes in Japanese pigs; JANSON (2). *Distomum pulmonale* in dogs and pigs in Japan; JANSON (3). Liver fluke of dog and cat; JONG. *Strongylus vasorum*, in dog in Paris; RAILLIET & DROUIN. New cestodes in African dogs; SETTI. New cestodes in cats; RATZ; SETTI. Fur-seal: *Uncinaria* sp.; LUCAS. *Hyraax*: a new Cestode; SETTI. *Hystrix*: a new Nematode; SETTI. Mole: a cysticercus, reproducing by fission; BOTT. Mouse: a two-headed and proliferating cysticercus; BRAUN (1). Skunk: (from Ontario) with frontal bone of skull deformed by nematodes; WOODWORTH (1).

*Birds.*

Parasites of domestic birds; WARD. Of some African birds; SETTI. *Cittotenia* for the first time in a bird (*Anas* sp.); FUHRMANN. A new cestode from the wild duck; JACOBI (1). Experimental infection of ducks with 3 different cysticerci; ROSSETER (1) and (3). *Ascaris megaloccephala* in the duck; STOSSICH (1). A new Cestode in *Hemignathus*; SHIPLEY. *Distomum lucipetum*, between the eye and its lid of *Larus maculipennis*, from Brazil; BRAUN (2). Trematodes, Cestodes and Nematodes of birds; MÜLLER, p. 23.

Nematodes and *Echinorhynchus* in Reptiles; v. LINSTOW (1). Ophidia: *Trichosoma*; PARONA. *Strongylus viperæ* in *Coluber asculapii*; STOSSICH (1). Lacertilia: a cysticercoid in the Gecko; SONSINO (2).

*Amphibians.*

2 spp. of *Distomum* in frogs; BENSLEY.

*Fish.*

Occurrence and distribution of 45 cestode-parasites in fish; LINTON (2): of cestode larvæ; LINTON (1).

Fresh-water fish:—of Rhine, near Basel, (29 species),—18 species of trematodes, the influence of the food of the host, of temperature, season, and of locality of the host on their occurrence; the predominance of different species of parasites in different hosts; the proportion of fish infested and the organs attacked; viability of parasite outside its host—; HAUSMANN: of L. Balaton, (14 spp. of fish),—7 Cestodes, 2 Trematodes, 5 Nematodes, 2 *Echinorhynchus*, and the leech *Ichthyobdella fasciata* Dies.—117 specimens belonging to the 14 different species examined and all except the Carp found to be infested. Effects of parasites on hosts; RATZ (2).

Anatomy of leeches of Swedish fish (5 genera); JOHANSSON (1).

*Dactylocotyle*, a leech-like trematode, on gills of ling, off Scotland; SCOTT.

A new Cestode from *Genypterus* in Chili; RIGGENBACH. A new Trematode from *Triturus* of Japan; STURGES. Nematodes of African fish; SETTI.

*Arthropods.*

Insecta: *Gordius* and *Mermis*; v. LINSTOW.

Crustacea: Nereids commensal on Hermit Crabs; HARRINGTON. Leeches in branchial cavity of *Spatha* and *Paratelphusa*; BLANCHARD (1) & (4).

*Molluscs.*

Gastropods: of fresh-water round Pisa,—Trematodes; SONSINO (1).

Lamellibranchs: with *Distoma*-parasites infested by Myxospores living inside their shells; LÉGER. *Cercaria* of *Brachycalium*; GIARD (3) & (4). A n. sp. of *Malacobdella* in mantle-cavity of *Macrura*, Japan; TAKAHURA.

*“ Vermes.”*

Planarians preying upon earthworms and other planarians; STEEL (1) p. 109.

*Plants.*

Earthworms on plants from W. Indies; MICHAELSEN.

Enchytraeids as plant pests; FRIEND (1); STOKLASA.

The disease of beet-root caused by *Heterodera schachtii*; BOS.

## IV. SYSTEMATIC.

## ANNELIDA.

## A. GEPHYREA.

## A. INERMIA.

*Physcosoma*, n. n. for *Phymosoma*, auct., on account of the latter name being already appropriated; SELENKA, Zool. Anz. xx, p. 460.

B. ARMATA.

For *Sternaspis*, see under *Polychæta*, p. 35.

*Thalassema lanksteri*, n. sp., ♀, off I. of Man, 50 fms., differing from other species of *Thalassema* in having branched cloacal nephridia like *Hamingia*; enumeration of other species; HERDMAN, Quart. J. Micr. Sci. xl, p. 381; P. Liverp. biol. Soc. xi, p. 28.

B. CHÆTOPODA.

a. POLYCHÆTA.

*Amblyosyllis granosa*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 58.

*Ammotrypane aulopyge*, n. sp., S. Georgia, ? type of a new genus; EHLERS, Magal. Reise, p. 100.

*Ampharetidae*, held to be much more nearly allied to the *Terebellidae*, than to the *Amphicteisidae*, but with no connecting link with either family. The family divided into 4 groups, viz.: those with palæ (including the type *Ampharete* and the type *Amphicteis*), those without palæ (including the type *Sabellides* and the type *Samytha*), those with numerous body segments with *Melinna* only as type, and those with *Auchenoplax* as type; FAUVEL (3).

*Ampharete grubei*, Mgrn., external morphology, distribution, formation of tube, internal anatomy and histology; FAUVEL (3), pp. 13-132. *A. vega* (Wirén), description and figure; BIRULA (2), p. 102: *A. patagonica*, Kbg., and *A. kerguelensis*, McInt., distinguished from one another; EHLERS, Magal. Reise, p. 129.

*A. kowalewskii*, Grimm, probably = the young of *Hypania* (*Amphicteis*) *invalida*; BIRULA (1), p. 18.

*Amphicteis brevispinis*, Grube, considered the only well defined species of the genus *s. s.* in the Caspian; BIRULA (1), p. 17. *A. antiqua*, n. sp., G. of Taganrog, and Caspian Sea, regarded as a collective sp. or (?) as the type of a new genus *Hypania*; OSTROOUMOFF (1), p. 114. Also described and its relation to *A. invalida* dwelt upon by BIRULA (1). (*A. invalida*, Gr., referred to genus *Hypania*, Ostrooum, distribution of the sp. in the Caspian Sea and identification with it of (*Ampharete kowalewskii*, Grimm, and of (*Sabellides octocirrata*, Kow.); BIRULA (1). (*A. invalida* (var. *occidentalis*, n. var.), Caspian Sea; OSTROOUMOFF (2), p. 359; identified with *Hypania* (*Phenacia*) *oculata*, Schmank; BIRULA (1), p. 21.

*A. gunneri*, Sars, external and internal anatomy; FAUVEL (3), pp. 135-154.

*Amphitrite ornata*, Verr., early development and metamorphosis from free-swimming to creeping larva; MEAD, pp. 229-259.

*Aonides* (*gracilis*, Taub.), and *A. (fulgens*, Lev.), referred to n. g., *Levinsonia*, MÉSNIL (2).

*Arenicolidae*: relation of the family to the *Maldanidae*; suggested fusion of the 2 families to form a new fam. *Arenicolo-maldanida*, to include also his own fam. *Clymenidae*; MÉSNIL (2), p. 164.

*Arenicola assimilis*, n. sp. for *A. marina*, Cuv., var., Gr. ("Gazelle" annelids), Straits of Magellan, Uschuaia, S. Georgia and California; EHLERS, Magal. Reise, p. 103. *A. ecaudata*, near Port Erin, P. Liverp. biol. Soc. ix, p. 30. *A. cristata*, cleavage; CHILD. Resemblance of post-larval stage of *Arenicola* to genus *Clymenides*; MÉSNIL (2), p. 161.

*Aricia cirrata*, n. sp., near Falkland Is., p. 94, *A. marginata*, n. sp., S.

- Georgia, p. 95, *A. michaelsoni* and *A. tribulosa*, n. spp. and fragment of another sp., ? new, Straits of Magellan; EHLERS, Magal. Reise.
- A. arctica*, Hans., *A. armigera* (Müll.), *A. kuppferi*, Ehl., *A. quadriscuspida*, Oerst., defined and distinguished; BIRULA (2), p. 96.
- Autolytus gibber*, n. sp., Straits of Magellan and S. Georgia; EHLERS, Magal. Reise, p. 55.
- Axiothea torquata*, Leidy, for (*Clymenella torquata*, Verr.) *q. v.*; LEWIS (2).
- Branchiomaldane*, Lnglins., genus shewn to be intermediate between *Clymenides* and *Arenicola*; MÉSNIL (2), p. 156.
- Capitellides*, n. g. of *Capitellidae*, with modified dorsal chaetæ forming a copulatory apparatus in both sexes, for *C. giardi*, n. sp., Wimereux and St Martin's Bay; MÉSNIL, Zool. Anz. xx, p. 441.
- A peculiar *Capitellid* ?, (incomplete specimen only), Straits of Magellan, with body segmented like a Maldanid but with Capitellid-like chaetæ; EHLERS (1), p. 117.
- Chaetopterus (antarcticus, Kbg.)* = *C. variopedatus*, Ken.; EHLERS (1), p. 109. (*C. insignis*, Baird) = *C. variopedatus*; HORNEILL, p. 255. *C. pergamentaceus*, Cuv., early development; MEAD, p. 271.
- Clymene producta*, n. sp. in sand-flat of one of the tributaries of Vineyard Sound, Cotuit, Mass., with as many as 70 segments; LEWIS, P. Boston Soc. xxviii, p. 111.
- C. (Praxilla) kerguelensis*, McInt., and *C. (P.) assimilis*, McInt., amended description; EHLERS (1), p. 122.
- (*Clymenella*, Verr.) = *Axiothea*, Mgrn.; LEWIS (2). (*Clymenella torquata*, Verr.), habits and early development (cleavage); MEAD.
- Clymenidae* as a name for a new family intermediate between *Maldanidae* and *Arenicolidae*, to include the genera *Clymenides* and *Branchiomaldane*; MÉSNIL (2), p. 164.
- Clymenides*, definition of genus; its relations to *Arenicola*, especially to the young stages thereof; *C. ecaudatus* and *C. incertus*, n. spp., S. Martin's Bay, (on *Lithothamnion*), and further description of *C. sulfureus*, Clp.; MÉSNIL, Bull. Sci. France Belgique, xxx, pp. 148-156.
- †*Cornulites tasmanicus*, n. sp., casts, in Silurian blue schistose rock, Heazlewood, Tasmania; ETHERIDGE, P. Soc. Tasmania, 1896 (7), p. 37.
- Ctenodrillus*, see under ARCHIANNELIDA, p. 37.
- Dexiospira*, n. subg. of *Spirorbis*, *q. v.*; MÉSNIL & CAULLERY (4) & (3).
- Diopatra dorsalis*, n. sp., Straits of Magellan and E. coast of Patagonia; EHLERS, Magal. Reise, p. 71.
- Disoma carica*, n. sp., Gulf of Obi; BIRULA, Ann. Mus. St. Petersb., 1897, p. 99.
- Disomidae*, n. fam. for the 2 genera *Disoma*, Oerst., and *Pacilochastus*, Clp.; allied to the *Chaetopteridae*, intermediate between them and the *Spionidae*; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 94.
- Dodecaeria concharum*, Oerst., an instance of heteromorphosis in; MÉSNIL & CAULLERY (1).
- Epicaste*, Kbg., ? = *Glycinde*, Fr. Müll.; EHLERS (1), p. 82.
- Eteone sculpta*, n. sp., S. Georgia, and *E. spathocephala*, Straits of Magellan and E. coast of Patagonia; EHLERS, Magal. Reise, pp. 32 & 33.
- Eulalia subulifera*, n. sp., Straits of Magellan and S. Georgia; EHLERS, Magal. Reise, p. 29.
- Eunice (Claparedi, Qfg.)*, *E. (harassii, Gr.)*, *E. (laurillardii, Qfg.)*, and *E. (torquata, Clp.)*, all referred to *E. fasciata*, Risso; EHLERS, l. c. p. 11.
- E. (schizobranchia, Clp.)*, and *E. (simplex, Pet.)*, both referred to *E. sicilensis*, Gr.; EHLERS, Nachr. Ges. Göttingen, p. 169. *E. (collaris, Gr.)*, *E. (leucosticta, Gr.)*, and *E. (punctata, Pet.)*, all referred to *E. afra*, Pet.; EHLERS, l. c. p. 166.
- Eupolyodontes cornishii*, Buchanan, specimen from New Caledonia, amended description; FAUVEL (1).

- Eurythoe complanata*, Pall., synonymy and geographical distribution : (*E. pacifica*, Kbg.) and (*E. alcyonia*, Sav.) identified with it; EHLERS, Nachr. Ges. Gottingen, p. 163.
- Evarve atlantica*, n. sp., off Rockall; MCINTOSH, Ann. Nat. Hist. (6) xx, p. 168; and *E. normani*, n. sp., from the coast of Norway; *Ib.*, t. c. p. 174.
- Exogone heterosetosa*, McInt., amended description; EHLERS (1) p. 51.
- Fabricia alata*, n. sp., Straits of Magellan, and S. Georgia; EHLERS, Magal. Reise, p. 135.
- Flabelligera induta*, n. sp., Straits of Magellan, and S. Georgia; EHLERS, Magal. Reise, p. 105.
- Gattyana*, n. nom. for *Nychia*, Norman; *G. (Nychia) cirrosa*, phosphorescence in; MCINTOSH (2.—1).
- Glycera alba*, Rtk., anatomy, p. 14, and *G. capitata*, Oerst., anatomy, p. 23; *G. gaei*, Mlgrn., description and distribution, p. 4, anatomy, p. 19; *G. siphonostoma*, D. Ch., anatomy, p. 21; ARWIDSSON. *G. longipinnis*, Gr. ? from Zanzibar; EHLERS (3) p. 170.
- (*G. kerguelensis*, McL.)=*G. capitata*, Oerst.; EHLERS (1) p. 80.
- Goniada maculata*, Oerst., anatomy; ARWIDSSON, p. 8.
- Grubea rhopalophora*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 53.
- Harmothoe fraser-thompsoni*, n. sp., S. W. Ireland, 93 fathoms; MCINTOSH, P. Dublin Soc. viii, p. 401. *H. spinosa*, Kbg., Kinberg's specimens re-examined and his figure of a parapodium shown to be incorrect; EHLERS, Magal. Reise, p. 13.
- (*Hemipodus magellanicus*, McInt.), and (? *H. roseus*, Qfg.)=*Hemipodia patagonica*, Kbg.; EHLERS (1) p. 81.
- Hermadion molluscum*, n. sp., S. Georgia; EHLERS, Magal. Reise, p. 16.
- (*H. kerguelensis*, McInt.)=*H. magalhaensi*, Kbg.; EHLERS, l. c. p. 15.
- Hesione sicula*, D. Ch., nephridia; GOODRICH (1).
- Hydroides dianthus*, segmentation; TREADWELL.
- Hypania*, n. g. of *Amphictenidae*; OSTROUMOFF (2) p. 358. Including the spp. *H. (Amphicten) invalida* Gr., *H. (Phenacia) oculata* Schmank. and *H. antiqua* Ostrooum.; BIRULA (1) p. 23.
- Læospira*, n. subg. of *Spirorbis*, q. v.; MÉSNIL & CAULLERY (4) & (3).
- (*Lagisca magellanica*, McInt.) and its varr. (*grubei*) and (*murrayi*, McInt.) all referred to *Harmothoe spinosa*, Kbg.; EHLERS, Magal. Reise, p. 12.
- (*L. antarctica*, McInt.)=*L. ("Polynoe") vesiculosa*, Gr.; EHLERS, l. c. p. 14.
- Laonome antarctica*, Kbg., amended description; EHLERS, l. c. p. 135.
- Leodora*, see under *Spirorbis*.
- Lepidonotus*, sp., influence of temperature and light on cleavage; MEAD, p. 265.
- Leprea streptochaeta*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 130.
- Levinsonia*, n. g. for (*Aonides*) *gracilis*, Tauber, and (*A.*) *fulgens*, Lev., probably allied to *Cirratulidae*; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 93.
- Lumbriconereis cingulata*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 76. *L. vanhoeffeni*, n. sp., Mchlsn., Little Karajakfjord, Greenland; VANHOEFFEN, p. 222.
- Maldane amphiglypta*, n. sp., S. Georgia; EHLERS, Magal. Reise, p. 119.
- Melinna cristata*, Sars, and *M. palmata*, Gr., external and internal anatomy; FAUVEL (3), pp. 163-172.
- Micromaldane*, n. g. of *Maldanidae* for *M. ornithochaeta*, n. sp., on *Lithothamnion polymorphum*, S. Martin's Bay; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 146.



- Microspio atlantica*, Lnglms., at C. de la Hague; MÉSNIL (2) p. 85.
- Neottis rugosa*, n. sp., Zanzibar (without eyespots); EHLERS, Nachr. Ges. Gottingen, 1897, p. 171, and (2) p. 108.  
(*N. spectabilis*, Verr.) and (*N. antarctica*, McInt.) = *Thelepus spectabilis* (Verr.); EHLERS (1) p. 133.
- Nephtys serratifolia*, n. sp., near Falkland Islands; EHLERS, Magal. Reise, p. 24. *N. (trisoophyllus*, Gr., and McInt.) = *N. virgini*, Kbg., description of species; EHLERS (1) p. 19. *N. scolopendroides*, D. Ch., nephridia; GOODRICH (1).
- Nereis cyclurus*, n. sp., atochous *Nereis*-form and epitochous *Nereis*- and *Heteronereis*-form (♀s only), commensal on hermit crabs in *Pteronotus*, *Fisus*- and *Natica*-shells on Pacific coast of N. America; HARRINGTON, Tr. N. York Ac. xvi, p. 219.  
*N. fucata* ♂ *inquilina*, ? = the epitochous ♀ form of the ordinary *Nereis fucata*; HARRINGTON, l. c. p. 218. *N. (antarctica*, Verr.) and *N. (eatonii*, McI.) = *N. magalhaensis*, Kbg.; EHLERS (1) p. 63.  
*N. camiguina*, Gr. ?, from Zanzibar; EHLERS, Nachr. Ges. Gottingen, p. 165.  
*N. eugeniae*, Kbg., char. emend.; EHLERS (1) p. 67.
- "*Nerine vulgaris*, Johnston?" (M. Sars), ? = *Scolecoplepis vulgaris*, Johnst., and Sars ?; EHLERS (1) p. 86.
- Notocirrus lorum*, n. sp., near Falkland Islands; EHLERS, Magal. Reise, p. 78.  
(*Nychia*), reasons given for replacing this generic name by another, for which the name *Gattyana*, Norman, is proposed; MCINTOSH (2.—1).
- Oria limbata*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 137.
- Pallasia serungula*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 125.
- Paradeisospira*, n. subg. of *Spirorbis*, q. v.; MÉSNIL & CAULLERY, C.R. Ac. Sci. cxiv, p. 50.
- Paralæospira*, n. subg. of *Spirorbis*, q. v.; *Ib. t. c.*
- (*Phenacia oculata*, Schmank.), referred to genus *Hypania*, Ostrooum; BIRULA (1) p. 19.
- Pholoë*, only one British species recognised, viz. *P. minuta*, Fabr. *P. (inornata)* and *P. (eximia*, G. Johnst.), to be regarded as varieties of it only; MCINTOSH, Ann. Nat. Hist. xx, p. 169.
- Phyllococe polyphylla*, n. sp. with three first segments fused on ventral surface, S. Georgia; EHLERS, Magal. Reise, p. 26.
- Phyllosyllis*, n. g. of *Syllidæ* (leading on from *Autolytidæ* to *Phyllococidæ*), for *P. albida*, n. sp., S. Georgia; EHLERS, Magal. Reise, p. 61.
- (*Physelia agassizi*, Kbg.), referred to genus *Nicolea*; EHLERS (1) p. 132.
- (*Platynereis antarctica*, Kbg.) and (*P. patagonica*, Kbg.) = (*P.*) *Nereis magalhaensis*, Kbg.; EHLERS (1) p. 63.
- Podarke obscura*, segmentation; TREADWELL.
- Pæcilochetus*, Clp., referred to a new family *Disomidæ*; MÉSNIL (2) p. 94.
- Polydora caulleryi*, n. sp., in *Pomatoceros* tubes, C. de la Hague, and another n. sp. ?, fragment only, and remarks on *P. quadrilobata*, Jacobi; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 88.
- Polynoe*, n. sp. ?, like *P. impatiens*, Sav., but with edge of elytra not fringed, Zanzibar; EHLERS, Nachr. Ges. Gottingen, p. 164.  
(*P. fullo*, Gr.) = *Harmothoe spinosa*, Kbg.; EHLERS, Magal. Reise, p. 12. *P. (trissochetus*, Gr.) = *P. glauca*, Peters.; EHLERS, Nachr. Ges. Gottingen, p. 163.
- Prionospio*, only 2 spp., viz. *P. steenstruppi*, Mgrn., and *P. malmgreni*, Clp., recognised, the others being too badly defined to be placed; MÉSNIL (2) p. 90. *P. curriera* (Wirén), amended description; BIRULA (2) p. 102.
- Promenia fulgida*, n. sp., S. Georgia, and *P. jucunda*, Kbg.; EHLERS, Magal. Reise, p. 114.

- Pygospio*, 2 spp., viz. *P. seticornis*, Oerst., and *P. elegans*, Clp., recognised; MÉSNIL (2) p. 85.
- Romanchella*, n. subg. of *Spirorbis* for *S. (R.) perrieri*, n. sp., and ? for *S. verruca*, Fabr., possibly coinciding with the subg. *Leodora*, St.-J.; MÉSNIL & CAULLERY (4) p. 210.
- Sabella sulcata*, n. sp., Zanzibar, ? to include (*S. fusca*, McL.) non Gr.; EHLERS, Nachr. Ges. Göttingen, 1897, p. 173 & (2) p. 109.
- Sabellides*, position of genus in the *Ampharetidae*; FAUVEL (3) p. 179. (*S. kowalewskii*, Grimm) = *Hypania invalida*; BIRULA (1).
- Samytha adspersa*, Grube, external and internal anatomy; FAUVEL (3) pp. 155-162.
- Scalibregma inflatum*, Rathke, var. *corethrurus*, n. var., Mehlsn., Little Karajakfjord, Greenland; VANHOEFFEN, p. 223.
- Scolecopsis glutæa*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 83. *S. viridis*, Verr., early development (cleavage); MEAD, p. 270. (*Serpula narconensis*, Baird) and (*S. n.* var. *magellanica*, McL.) and (*S. patagonica*, Gr.), all = *S. vermicularis*, L.; EHLERS (1) p. 140.
- Spherosyllis hirsuta*, n. sp. (? the type of a new genus), and *S. retrodens*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, pp. 48 & 46.
- (*Spio seticornis*, Oerst.) non Fabr., referred to genus *Pygospio*: (*S. rathbuni*, Webst. & Ben.) = *Pygospio elegans*, Clp.: *Spio filicornis*, Fabr., compared with *S. martinensis*, Mesn.; MÉSNIL (2) p. 84. *S. martinensis*, Mésnil, gregarine-parasite with another new kind of parasite inside it; CAULLERY & MÉSNIL (2).
- Spiophanes*, 2 spp., viz. *S. krøyeri*, Gr., and *S. bombyx*, Clp., recognised, and distinguished from one another; MÉSNIL (2) p. 91.
- Spirorbis*, splitting up of genus into the following subgenera:—
- Subg. *Dexiospira*, for species with right-handed twist and 3 thoracic segments, with 6 species, including *S. marioni*, n. sp., Panama, p. 199;
- Subg. *Læospira*, for species with left-handed twist and 3 thoracic segments, with 10 species, including *S. bernardi*, n. sp., probably from the Indian Ocean, p. 214, *S. koehleri*, n. sp., Mediterranean, p. 214, *S. langerhansii*, n. sp., Panama, p. 217, *S. mediterraneus*, n. sp., Mediterranean, p. 211;
- Subg. *Paradexiospira*, for species with right-handed twist and 3½ thoracic segments, with 3 species, all from Iceland or Greenland, p. 195;
- Subg. *Paralæospira*, for species with left-handed twist and 3½ thoracic segments, with 6 spp., viz.: *S. aggregatus*, *claparedi*, *lebruni*, *levinseni*, *patagonicus*, n. spp., Coast of Patagonia, and *S. maldardi*, n. sp., St Vaast-la-Hougue, pp. 202-207;
- Subg. *Romanchella* and *Leodora*, for left-handed species with characteristic chaetæ in first chaetiferous segment, with 3 species, including *S. (R.) perrieri*, n. sp., with 3 varr., all from Coast of Patagonia, pp. 208-211; MÉSNIL & CAULLERY, Bull. Sci. France Belgique, xxx.
- S. borealis*, anatomy; SCHIVELEY.
- Sternaspis thalassemoides*, Otto, genital organs, nephridia, muscular system and cuticle; GOODRICH (2).
- Sthenelais haddoni*, n. sp.?, S. W. Ireland, at depth of 328 fathoms; MCINTOSH, P. Dublin Soc. viii, p. 403. *S. sarsi*, n. sp., Hardanger Fjord, and *S. heterochata*, n. sp., also from Coast of Norway; MCINTOSH, Ann. Nat. Hist. xx, pp. 174 & 176.
- S. picta*, segmentation of egg; TREADWELL.
- Syllides articulatus*, n. sp., Straits of Magellan, and another, ? n. sp.; EHLERS, Magal. Reise, p. 42.
- Syllis anops*, n. sp., Straits of Magellan, *S. brachycola*, n. sp., Straits of Magellan and S. Georgia; EHLERS, Magal. Reise, pp. 39 & 38.

- (*S. gigantea*, McInt.), referred to genus *Trypanosyllis*; EHLERS, Magal. Reise, p. 35.  
 (*Thelepus mcintoshii*, Gr.) = *T.* ("Neottis") *spectabilis*, Verr.; EHLERS, l. c. p. 133.  
*Thoracophelia*, n. g. for *Opheliidae* with body divided into two regions, i. e. for *T. furcifera*, n. sp., Straits of Magellan; EHLERS, l. c. p. 101.  
*Timarete*, char. emend., p. 111, *T. nasuta*, n. sp., Straits of Magellan, p. 112; EHLERS, l. c.  
*Tomopteris*, probable identity of the three European species: *onisciformis*, (*vitrina*), and (*scotopendra*); FOWLER, P. Zool. Soc. London, p. 523.  
*Travisia oleus*, n. sp., Straits of Magellan, and amended description and figure of *T. kerguelensis*, McInt.; EHLERS, l. c. p. 98.  
*Trophonia kerguelarum*, Gr., char. emend.; EHLERS, l. c. p. 107.  
*Tyrrhena clapedii*, Qfg., nephridia; GOODRICH (1).

## b. OLIGOCHÆTA.

- Acanthodrilus africanus*, n. sp., p. 344, *A. arenarius*, n. sp., p. 340, *A. arundinis*, n. sp., p. 339, *A. excavatus*, n. sp., p. 342, *A. falcatus*, n. sp., p. 341, *A. lucifuga*, and *A. photodilus*, n. spp., p. 343, *A. purcelli*, n. sp., p. 337, and *A. sclateri*, n. sp., p. 342, Cape Colony; BEDDARD, P. Zool. Soc. London, 1897. *A. majungianus* and *A. voeltzkowi*, n. spp., Majunga, Madagascar, and *A. braueri*, n. sp., Mahé, at a height of 300-400 m.; MICHAELSEN, Abh. Senckenb. Ges. xxi, pp. 218-224. *A. exul*, n. sp., I. of S. Antonio (C. Verde Is.); ROSA, Boll. Mus. Torino, xii, N. 308.  
*Allolobophora auriculata*, n. sp., Gutenstein (Lower Austria), *A. handlirschi*, Unterberg (Lower Austria), and *A. rebelii*, n. sp., Bulgaria, and remarks on *A. lissaensis*, Mich.; ROSA, op. cit. N. 269.  
*Benhamia aitkeni*, n. sp. (or ? type of n. g.), Travancore, p. 431, and *B. poonensis*, n. sp., Poona, p. 434, and *B. travancorensis*, n. sp., Travancore, p. 433; FEDARR, J. Bombay Soc. xi.  
*Bohemilla comata*, Vejd., in France (S. of Aigremont); RICHARD (1).  
*Criodrilus breymanni*, n. sp., Columbia; MICHAELSEN, Zool. Jahrb. Anat. x, p. 383.  
*Ctenodrilus*, see under ARCHIANNELIDA (p. 37).  
*Desmogaster schildi*, n. sp. (the 3rd of the genus), Sumatra; ROSA, Ann. Mus. Genova, xvii, p. 339.  
*Enchytræus parvulus*, n. sp., British; FRIEND, Zoologist (4) i, p. 349.  
*Eudrilidae*, 7 genera on W. coast of Africa, all distinct from those on E. coast; BEDDARD (1) p. 346.  
*Fridericia bichæta*, and *F. oligosetosa*, n. spp., Galicia; NUSBAUM.  
*Iridodrilus*, n. g. of *Eudrilidae* for *I. roseus*, n. sp., Lagos; BEDDARD, P. Zool. Soc. London, p. 346.  
*Kynotus schistocephalus*, n. sp., p. 239, and *K. voeltzkowi*, n. sp., p. 245, Majunga, Madagascar; enumeration of the other 6 spp. with a table to distinguish them; MICHAELSEN, Abh. Senckenb. Ges. xxi.  
*Megascolex konkanensis*, n. sp., N. Konkan and Travancore; FEDARR, J. Bombay Soc. xi, p. 434.  
*Megascoides americanus*, n. sp., Washington; SMITH, Amer. Nat. 1897, p. 203.  
*Microchæta algoensis* and *marenzelleri*, n. spp., Algoa Bay; ROSA (4).  
*Onychochæta windlei*, Bedd., living specimens from W. Indies described, full anatomy; MICHAELSEN, p. 378.  
*Perichæta*, remarks on reduction of spp. in the genus and description of *P. arturi*, n. sp., p. 206, *P. novæ-britannicæ*, n. sp., p. 199, and *P. sedgwickii*, n. sp., p. 201, all from Blanche Bay, Gazelle Peninsula, New Britain; and of *P. floweri*, n. sp., p. 217, Bukit Timah, Singapore,

and *P. madelinæ*, n. sp., p. 219, Kina Balu, Borneo; *P. malamaniensis*, Benh., Philippine Is., redescribed and diagnosed, p. 213; BENHAM, J. Linn. Soc. xxvi. *P. travancorensis*, n. sp., Travancore; FEDARB, J. Bombay Soc. xi, p. 435.

*P. biserialis*, E. Perr., *P. dyeri*, Bedd., and *P. mauritiana*, Bedd., descriptions and synonymy of spp.; MICHAELSEN (2) pp. 226-237.

*Perionyx*, sp. l, Madagascar (probably imported from E. Indies); MICHAELSEN (2).

*Pontoscolex*, table of spp. and description of *P. lilljeborgi*, n. sp., Antigua, and of *P. corethrurus*, var. *mexicanus*, n. var.; EISEN, Lilljeb. Festschr. *P. (hawaiiensis)*, Bedd., = *P. corethrurus*, Fr. Müll.; MICHAELSEN (2) p. 280.

*Tykonus perigrinus*, n. sp., West Indies, detailed anatomy, pp. 360-376: *T. wiengreeni*, n. sp., Brazil, p. 376; MICHAELSEN, Zool. Jahrb. Anat. x.

### C. MYZOSTOMIDÆ.

Early development in *Myzostoma*; WHEELER, KOSTANECKI.

### C. ARCHIANNELIDA.

*Bdellodrilus*, nephridia described and figured of 4 spp.; MOORE.

*Branchiobdella*, physiology; CUÉNOT.

*Ctenodrilus*, referred to the Polychæt family *Cirratulidæ*, comparison with *Dodecaceria*; MÉSNIL & CAULLERY (2).

### D. HIRUDINEA.

*Abranchus*, n. g., with six eyes and no lateral hearts, for *A. brunneus* and *A. microstomus*, n. spp., coast of Sweden, and for *A. (Platybdella) sexoculata*, Malm; JOHANSSON, Akad. Afh., Upsala, 1896.

*Callobdella*, v. Ben. and Hesse, amended definition of genus, and of a species hitherto insufficiently diagnosed; JOHANSSON, l. c.

*Dina weberi*, n. sp., Java, Sumatra, and Celebes; BLANCHARD, Weber's zool. Ergebn. iv, p. 353.

*Epactodesminæ*, n. subf. of *Herpobdellidæ*; BLANCHARD (2).

*Glossiphonia weberi*, n. sp., Lake of Manindjan (Sumatra); BLANCHARD, l. c. p. 332. *G. stuhlmanni*, n. sp., wood near Kasja (Karague); BLANCHARD, Thierwelt Ost-Afr. p. 1.

*Hæmopsis weberi*, n. sp., Kaju tanam R., Sumatra; BLANCHARD, Weber's zool. Ergebn. p. 352.

*Haplodesminæ*, n. subf. of *Herpobdellidæ*; BLANCHARD (2).

*Helobdella*, n. g. of *Glossiphonidæ* for *H. tricarinata*, n. sp., parasitic in branchial cavity of *Spatha wahlbergi*, Bubu stream near Mbahi (Ugogo); BLANCHARD, Thierwelt Ost-Afr. p. 4. *H. gracilis*, n. sp., in branchial cavity of *Paratelphusa* sp. ?, Java (Buitenzorg); BLANCHARD, Weber's zool. Ergebn. iv, p. 334. *H. javanica*, n. sp., Java; BLANCHARD, Notes Leyden Mus. xix, p. 80.

*Hirudo hildebrandti*, n. sp., Mombas and Bussisi (Victoria Nyanza); BLANCHARD, Thierwelt Ost-Afr. p. 5. *H. timorensis*, n. sp., freshwater lakes in Timor; BLANCHARD, Notes Leyden Mus. xix, p. 82.

*Limnatis africana*, n. sp., Schiefelinsville, Liberia and Senegal; BLANCHARD, Notes Leyden Mus. xix, p. 108. *L. (Pacilobdella) granulosa*, Sav. & Bl., synonymy, distribution and description; BLANCHARD (4) pp. 338-349. *L. (P.) javanica*, l. b. t. c. pp. 349-352.

*Malacobdella japonica*, n. sp., from mantle cavity of *Mactra sachalinensis*; TAKAHURA, Annot. zool. Japon. i, p. 105.

*Mimobdella*, n. g., resembling *Trocheta*, but with an even number of short annuli instead of an uneven, for *M. japonica*, n. sp., Japan, and *M. büttikoferi*, n. sp., Borneo; BLANCHARD, Notes Leyden Mus. xix, pp. 92-96.

- ("Nephelis (species dubia)" Horst) = *Scaptobdella horsti*, n. g., n. sp.; BLANCHARD (2) p. 97. *N. lateralis*, description; BRISTOL, Zool. Bull. i, pp. 35 & 36.
- Phytobdella moluccensis*, n. sp., Morotai I., Moluccas; BLANCHARD, Notes Leyden Mus. xix, p. 88.
- Piscicola (perspicax* Ols.) and *P. (lippa* Ols.) = *P. geometra*; (*P. picta* Ols.) = *Ichthyobdella elegans*, Sars; JOHANSSON.
- Planobdella quoyi*, n. sp., Menado (Celebes); BLANCHARD, Notes Leyden Mus. xix, p. 91.
- Platybdella*, A. W. Malm, amended diagnosis of the genus and 3 of the spp.; (*P. sexoculata*, Mgrn.) referred to a new genus *Abranchus*; JOHANSSON.
- Salifer*, n. g. of *Herpobdellidae* for *S. perspicax*, n. sp., Kiriwia (N. W. of Albert Edward Lake), and another (unnamed) species from Madagascar; BLANCHARD (1) p. 7.
- Scaptobdella*, n. g., resembling *Trocheta* but without pseudognaths and with intercalary annulus formed at the expense of the 4th (not 3rd) large annulus, for *S. horsti*, n. sp., Sumatra, Java and Borneo; BLANCHARD, Notes Leyden Mus. xix, p. 96.

## PLATYHELMINTHES.

### A.—CESTODA.

#### *Adult Forms.*

- Amabilia lamelligera*, Owen, detailed anatomy of genital system; DIAMARE (1). [See also under "*Diploposthe*."]
- Anoplocephala pagenstecheri*, n. sp., intestine of *Hyrax*, near Asmara; SETTI, Atti Soc. Ligustica, viii, p. 223.
- (*Bothriocephalus zschokkei*, Fuhrm.) = *Schistocephalus dimorphus*, Creplin; LÜHE (1).
- Bothriotenia chilensis*, n. sp., from intestine of *Genypterus chilensis*, Chili; RIGGENBACH, Act. Soc. Chili, vii, p. 66.
- Cittotenia avicola*, n. sp., in a bird (*Anas*), genus only known in rodents before: anatomy; FUHRMANN, Rev. Suisse Zool. v, p. 107.
- Davainea madagascariensis*, Blanch., in Guiana; BLANCHARD (3).
- Dibothrium hastatum*, n. sp., from *Polyodon spatula*; *D. laciniatum*, n. sp., from *Tarpon atlanticus*; and *D. occidentale*, n. sp., from *Sebastodes* sp.; LINTON, P. U. S. Mus. xx.
- Dicranotenia coronula*, Duj., description of *Cysticercus*; ROSSETER (3) p. 399.
- Diploposthe*, n. g. for *Tænia lævis*, Dies; JACOBI (1). Distinction of genus from *Amabilia*; JACOBI (2) and DIAMARE (2).
- Dipylidium chyzeri*, n. sp., intestine of cat,—distinguished from *D. caninum* and from *D. pasqualei*; RATZ, Termes. Fuzetek, xx, p. 259, and Centrbl. Bakter. (1) xxi, p. 468.
- Drepanidotenia hemignathi*, n. sp., from intestine of *Hemignathus procerus*, Sandwich Is.; SHIPLEY, Quart. J. Micr. Sci. xl, p. 620. *D. gracilis* and *tenuirostris*, descriptions of *cysticerci*: ROSSETER (3) p. 400.
- Mesocoestoides longistriatus*, n. sp., intestine of Selvaticau cat, Ghinda; SETTI, Atti Soc. Ligustica, viii, p. 235. *M. lineatus* (Goeze), intestine of Jackal, near Massaua, amended description; SETTI, l. c. p. 227.
- Monobothrium heyacotyle*, n. sp., from *Catastomus* sp.; LINTON, P. U. S. Mus. xx.

*Ophryocotyle proteus*, distinguished from *O. lacazei*, with which (*O. insignis*, Lönnb.) is identified,—criticism of Blanchard's & Styles' descriptions; VILLOT (1).

*Orygmatobothrium paulum*, n. sp., from *Galeocерdo tigrinus*, and *O. crenulatum*, n. sp., from *Dasyatis centrura*; LINTON, P. U. S. Mus. xx. *Otobothrium dipsacum*, n. sp., from *Pomastomus saltatrix*; LINTON, P. U. S. Mus. xix.

*Plerocercus echicola*, n. sp., larva, from mesentery of *Echis*, sp.; COLLIN.

*Rhynchobothrium agile* and *brevispine*, n. spp., from *Rhinoptera bonasus* (?); LINTON, P. U. S. Mus. xx. *R. speciosum*, n. sp., in fish, larval stage only; LINTON, P. U. S. Mus. xix.

*Tænia brauni*, n. sp., p. 210, and *T. serrata*, Goeze ?, p. 214, intestine of dog, Ghinda, *T. erythræa*, n. sp., from small intestine of a *Canis mesomelus* in Massaua, p. 220, *T. sp. ?*, in a Carnivor, Massaua, p. 218; SETTI, Atti Soc. Ligustica, viii. *T. venusta*, n. sp., in intestine of duck, with its *cysticercus* in body cavity of *Cypris cinerea*, pond near Canterbury; ROSSETER, J. Quekett Club, vi, p. 312. *T. salvelini*, n. sp., from *Cristivomer namaycush*; LINTON, P. U. S. Mus. xx. *T. triangularis*, n. sp., from intestine of *Scolopax galinula*; MÜLLER, Arch. Naturg. lxiii, p. 24.

(*T. demerariensis*, n. sp.? Daniels) = *Davainea madagascariensis*, Blanch.; BLANCHARD (3). (*T. lævis*, Dies), referred to a new genus *Diploposthe*; JACOBI (1). *T. confusa*, note on; WARD (3). *T. liophallus*, discovery of *cysticercus* in *Cypris cinerea*, in Kent; ROSSETER (2).

**Young Forms.** [See also under *Tænia*, *Drepanidotænia*, *Plerocercus* and *Rhynchobothrium*.]

*Cysticercoid*, n. sp., in a Gecco (*Ascolobotes mauritanica*); SONSINO, Atti Soc. Tosc. x, p.-v. p. 257.

*Cysticercus longicollis*, Rud., a new variety, characterised by budding, in mole; BOTT, Zeitschr. wiss. Zool. lxiii, p. 137. [Cf. Zool. Rec. 1896, Vermees, p. 37.]

*C. venustus*, in *Cypris cinerea* [see under "*Tænia*"]; ROSSETER (1). Discovery of *cysticercus* of *Tænia liophallus* in *Cypris cinerea*, Kent; ROSSETER (2).

(*C. talpæ*, Bendz) = *C. longicollis*, Rud.; BOTT, p. 135.

## B.—TREMATODA.

### Adult Forms.

*Amphistomum explanatum*, Creplin, refund, in Cochin-China cattle, and redescribed; RAILLIET & GOMY.

*Brachycalium luteum*, P. J. v. Ben.: identification of the *cercaria*, in *Donax trunculus* and *Pholas candida*, Arcachon and Wimereux; GIARD (3). Another species, differing only from *B. luteum* in the relative sizes of the anterior and posterior suckers, in *Donax* and *Tellina* (4 spp.); GIARD (4).

*Diplosoon paradoxum*, v. Nordm., difference of size in different hosts (Cyprinoid fish); HAUSMANN, p. 36.

*Distomum pancreaticum*, n. sp., salivary glands of cattle; JANSON, Mt. Ges. Tokio, 1895, p. 272. *D. patellare*, n. sp., bladder of *Triturus pyrrhogaster*, Japan, allied to *D. folium*, v. Olf.; STURGES, Zool. Bull. i, p. 57.

*D. (Dicrocalium) angusticollis*, n. sp., intestine of *Cottus gobio*, Rhine, p. 24, and *D. perlatum*, v. Nordm., var. *exspinosum*, n. var. from Rhine, p. 29: anatomy; HAUSMANN, Rev. Suisse Zool. v.

*D. (Polyorchis) ragazzi*, n. sp., from "Squali," L. Massaua; SETTI, Atti Soc. Ligustica, viii, p. 203. *D.*, n. sp.? intestine of Pelican, Massaua; *ibid.* p. 207.

*D. cygnoides*, Zeder., 2 distinct spp.?, or at least 2 varr., included under the name by Looss and other authors. Their respective characteristics; BENSLEY, Centrbl. Bakter. (1) xxi, p. 326. *D. globiporum*, Rud., list of 20 hosts, p. 39, and *D. (Apoblena) appendiculatum*, Rud., remarks on anatomy, p. 38; HAUSMANN. *D. caudale*, Rud., from intestine of *Coracias garrula* (30 specimens), and *D. minutum*, Cobb., in an oyster catcher; MÜLLER, p. 16.

*Echinostoma tabulatum*, n. sp., from intestine of *Numenius arquatus*, p. 21, and *E. columba liviae*, ? n. sp., p. 23, and *E. spinulosum*, Rud., to be broken up into several spp., p. 20; MÜLLER, Arch. Naturg. lxiii.

*Epibdella hippoglossi*, O. F. M., anatomy; SCHÖTT.

*Gasterostomum fimbriatum*, v. Sieb., remarks on anatomy; HAUSMANN, p. 34.

*Mesostomum balatonicum*, n. sp., from a fish, L. Balaton; SZIGETHY.

*Monostomum lacteum*, n. sp., in cysts from the dura-mater of the brain of *Cottus scorpius*, Bohusland; JÄGERSKIÖLD, Lilljeb. Festskr., p. 167.

*Otiotrema*, n. g. of *Distomidae* for *O. torosum*, n. sp., intestine of a "Squalo," L. Massaua; SETTI, Atti Soc. Ligustica, viii, p. 199.

*Podocotyle*, n. sp., from *Numenius arquatus*; MÜLLER, Arch. Naturg. lxiii, p. 23.

*Tetracotyle*, sp.? in *Cobitis barbatula*; HAUSMANN, p. 36.

### Young Forms.

Identification of the setigerous *Cercaria* of Donax as that of *Brachycalium luteum*; GIARD (3).

*Cercaria monostomi*, n. sp., in 2 spp. of *Lymnæa* in brook near Göttingen; v. LINSTOW, Arch. mikr. Anat. xlviii, p. 376.

*Distomum isoporum*, Looss: what is probably the larva found in water insects near Göttingen; *D. endobium*, Duj., larva in *Phryganidae*; v. LINSTOW, Arch. mikr. Anat. xlviii, pp. 377 & 379.

### C.—NEMERTINEA.

*Amphiporus greenmani*, n. sp., Ludlam Bay, Sea Isle, N. J., p. 6, and *A. glutinosus*, Verr., p. 8; (*Amphiporus virescens*, Verr.) referred to a n. g. *Zygonemertes*, p. 2; MONTGOMERY, Zool. Jahrb. Syst. x.

*Proneurotes*, n. g. with *P. multioculatus*, n. sp., single specimen, at low tide level, Sea Isle, N. J.; MONTGOMERY, Zool. Jahrb. Syst. x, p. 4.

*Prosorhochmidae*, Bürger.—Objections to retaining such a family; MONTGOMERY (2) p. 39.

*Stichostemma*, definition of genus, its distinction from *Tetrastemma*, its nephridia, p. 38, connective tissue, p. 32; and description of *S. elihardi*, n. sp., Montg. (with several nephridia, not in pairs, on each side of body, not all opening to the exterior); MONTGOMERY (2) & (3). [See also Amer. Nat. xxxi, p. 722.]

*Tetrastemma flagellatum*, n. sp., Ludlam Bay, Sea Isle, N. J., p. 11, and notes on anatomy of *T. elegans*, Verr., and *T. vermiculum*, Qtrf.; MONTGOMERY, Zool. Jahrb. Syst. x, pp. 9–11. *T. catenulatum* (Verr.), n. sp., for *T. (vermiculum) catenulatum*, Verr.; MONTGOMERY (2) and (4).

*T. vermiculus*, Qfg., development; LEBEDINSKY.

*Zygonemertes virescens* (Verr.), n. g., for (*Amphiporus v.*, Verr.); MONTGOMERY, Zool. Jahrb. Syst. x, p. 2.

## D.—TURBELLARIA.

- Amblycerus*, n. g. of *Euryleptidae*, connecting this family with the *Pseudoceridae*, for *A. luteus*, n. sp., Monterey Bay, California; PLEHN, Jena. Zeitschr. xxxi, p. 94.
- Archiplanoidea*, new order of Planarians for the genera *Catoplana*, *Ctenoplana* and *Heteroplana*, each ? the type of a new family; WILLEY (1) & (2).
- Bipatium ellioti*, *layardi*, *piceum*, *salvini*, *shipleyi* and *wrighti*, n. spp. and 2 other spp., N. and Central Celebes; v. GRAFF, Verh. d. zool. Ges. vii.
- Charadoplana langi*, for (*Geoplana langi*, v. Graff); v. GRAFF (1).
- Cotyloplana diesingi*, *dugèsi* and *sharpi*, n. spp., S. Celebes; v. GRAFF (2).
- Ctenoplana korotneffi*, n. sp., and *C. rosacea*, n. sp. (? or else *C. kovalevskii* Korot. refund.), Conflict Is., New Guinea Group; WILLEY (1).
- Dolichoplana harmeri*, n. sp., S. Celebes; v. GRAFF (2) p. 114.
- Geoplana albo-lineata*, n. sp., Bundanoon, p. 109, *G. atrata*, n. sp., Upper Manning River, p. 105, *G. elegans*, n. sp., Nerang River, Queensland, p. 111, *G. hillii*, n. sp., Bundanoon, p. 105, *G. parva*, n. sp., Nerang River, p. 107, *G. ponderosa*, and *G. robusta*, n. spp., Bundanoon, pp. 106–108, *G. quinquelineata*, var. *accentuata*, n. var., Victoria and Queensland; STEEL, P. Linn. Soc. N. S. Wales, xxii. *G. trifasciata*, n. sp., Navua River, Viti Levu (first representative of genus from South Pacific Is.); STEEL, t. c. p. 120. *G. gamblei*, *leuckarti*, *metzchnikoffi*, and *sieboldi*, n. spp., Celebes; and *G. ferrussaci*, n. sp., Brazil, referred to; v. GRAFF, Verh. d. zool. Ges. vii, p. 113. *G. brittlebanki*, *currièrei*, and *eugeniae*, n. spp., S. America; v. GRAFF (1). *G. cucullata*, n. sp., L. Mahinapua (near Hokitika, N. Z.), p. 259, *G. flavimarginata*, n. sp., greenhouse in Wellington, p. 259, *G. jacksoniana*, n. sp., Jackson B., N. Z., p. 262, *G. suteri*, n. sp., Dunedin, p. 263, *G. graffii*, var. *occidentalis* and var. *otiraensis*, n. varr., Otira and L. Mahinapua; DENDY, Tr. N. Zealand Inst. xxix.
- G. graffii*, Dendy, and *G. iris*, ? to be referred to *G. moseleyi*; DENDY, t. c. p. 262. (*G. langi*, v. Gr.), to the g. *Charadoplana*; v. GRAFF (1).
- Grafla buccincola*, n. sp., Irish Sea; JAMESON.
- Gyrator hermaphroditus*, Ehrb., from Bukoba, description; BÖHMIG (1).
- Heteroplana*, n. g., and type of new family of Planarians belonging to the Order *Archiplanoidea*, characterised by the atrophy of the one side of the body, hypertrophy of the other, with *H. newtoni*, n. sp., a single specimen on a *Madrepora* stock, Sandal Bay, Lifu; WILLEY, Quart. J. Micr. Sci. xl, p. 203.
- Hypotrichina*, n. g. of Rhabdocel, ciliated on the ventral surface only, for *H. circinnata* and *H. sicula*, n. spp., fine sand near Messina, and for *H. tergestina*, Trieste and Naples, and *H. marsiliensis*, Marseilles, n. spp. (Repiachoff); CALANDRUCCIO, Atti Acc. Gioen. x, Mem. xiv.
- Leptoplana californica*, n. sp., Monterey Bay, California; PLEHN, l. c. p. 93.
- Mesostomia wardii*, n. sp., Bull. Michigan Fish Comm. No. 6.
- Mesostomum balatonicum*, n. sp., L. Balaton; SZIGETHY.
- Monotus*, sp.?, stalked eggs and embryos attached to shell or siphon of *Donax* and *Tellina*, near Boulogne; *M. fuscus*, eggs on valves of *Balanus*; GIARD (5).
- Pelmatoplana martensi*, n. sp., S. Celebes; v. GRAFF (2).
- Phaecephalus cantori*, n. sp., China, and *B. floweri*, n. sp., Ceylon, referred to; v. GRAFF, Verh. d. zool. Ges. vii, p. 112.
- Phonaria simplex*, n. sp., Bull. Mich. Fish Comm. No. 6. [See Amer. Nat. xxxi, p. 241.]
- Planaria dorotocephala* and *P. uniconicola*, n. spp., Illinois; WOODWORTH (2), Bull. Mus. Harvard, xxxi, pp. 3–16. *P. laurentiana*, n. sp., San



- Lorenzo, Jujuy, and *P. andina*, Borelli, also in Argentine Republic; BORELLI, Boll. Mus. Torino, xii, N. 288. *P. venusta*, n. sp., in a tributary of the Ituri in West Lendu, 1250 m. above sea-level, and *P. brachycephala*, n. sp., in another subtributary of the Ituri; BÖHMIG, Thierwelt Ost-Africa, iv, pp. 12 & 13.
- Platydemus leidy*, n. sp., S. Celebes, first representative of the genus in the Indo-Malay region; v. GRAFF, Verh. d. zool. Ges. vii, p. 113.
- Polyporus*, n. g. of *Leptoplanidae* with *P. cæcus*, n. sp., single specimen from Advent Bay, Spitzbergen; PLEHN, Jena. Zeitschr. xxxi, p. 90.
- Prorhynchus putealis*, n. sp., or, ?, the type of a new genus, from deep wells, New Zealand; HASWELL, Quart. J. Micr. Sci. xl, p. 644.
- Rhynchodemus demani*, *lubbocki* and *rubrocinctus*, n. spp., N. Celebes; v. GRAFF, Verh. d. zool. Ges. vii, p. 114. *R. hectori*, n. sp., S. America; v. GRAFF (1). *R. scriptus*, n. sp., Navua R., Viti Levu, Fiji; STEEL, P. Linn. Soc. N. S. Wales, xxii, p. 121. *R. guttatus*, F. & H., its identity with (*R. victoriae*, var. *steelii*, Dendy); STEEL, t. c. p. 114.
- Stenostoma gilvum*, n. sp., *S. stuhlmanni*, n. sp., and *S. leucops*, O. Schm., Bukoba (L. Victoria); BÖHMIG, Thierwelt Ost-Africa, pp. 5-8. Genital organs of *S. leucops*; SABUSSOW.
- Uteriporus*, structure of ♂ and ♀ genital apparatus; systematic position of genus amongst the Tricladæ; points of analogy with the *Cestodaria*; BERGENDAL (1).
- Vortex quadridens*, n. sp., Bukoba, L. Victoria; BÖHMIG, l. c. p. 10.

## NEMATHELMINTHES.

### A.—NEMATODA and GORDIIDÆ.

#### (a) NEMATODA, S.S.

- Anchylostomum duodenale*, Düb., Life-history, transformation of free-living larva into adult; LOOSS, Centrbl. Bakter. (1) xxi, p. 913.
- Angiostomum rubrovenosum*, Schneider, parthenogenetic form, and ♂ and ♀, described; v. LINSTOW (3) p. 616.
- Ascaris madagascariensis*, n. sp., from *Potamocharus edwardsii*, Madagascar, and *A. pigmentata* from *Arctomys marmota*, n. sp. (in Zoological Gardens, Königsberg); v. LINSTOW, Arch. Naturg. lxiii, p. 27. *A. rostrata*, n. sp., æsophagus of *Sciæna aquila*; *A. macrolabium*, n. sp., from *Serranus gigas*; *A. mænæ zebrae*, n. sp., a larval form, ? of *A. udunoa*, and 3 other larval forms mentioned; STOSSICH (1). *A. ammocætis*, n. sp., larva, in *Ammocætes* (wrongly recorded as a *Filaria* last year); v. LINSTOW, Arch. mikr. Anat. xlviii, p. 375.
- A. rubicunda*, Schneid. ?; MÜLLER, Arch. Naturg. lxiii, p. 9.
- Ancyracanthus bihamatus*, n. sp., from wall of stomach of *Sterna risoria*; MÜLLER, Arch. Naturg. lxiii, p. 7.
- Chromadora tatrica*, n. sp., White Kezsmark Lake, 1600 m. above sea-level, Hungary; DADAY, Termes. Fuzetek, xx, p. 192.
- Cucullanus dumerilii*, Perrier, from *Emys*, description of ♀ for first time; v. LINSTOW (3) p. 615.
- Deontolaimus tatricus*, n. sp., 4th Kohlbach Lake, Tatra Mts., 2000 m. above sea-level; DADAY, Termes. Fuzetek, xx, p. 190; and Zool. Jahrb. Syst. x, p. 92.
- Dispharagus cordatus*, (= *D. anthuris*, Rud., Molin., Dúj.), in two spp. of *Lanius* and one of *Coracias*; MÜLLER, Arch. Naturg. lxiii, p. 5.
- Ethmolaimus tatricus*, n. sp., 4th Kohlbach Lake, 2000 m. above sea-level; DADAY, Termes. Fuzetek, xx, p. 192.

- Filaria australis*, n. sp., body-cavity of *Petrogale penicillata*, Gray, Australia; v. LINSTOW, Arch. mikr. Anat. xlix, p. 610. *F. effilata*, n. sp., from abdominal cavity of *Tragulus pygmaeus*; v. LINSTOW, Arch. Naturg. lxiii, p. 30.
- (*F. involuta*, v. Linst.) = *F. laticeps*, Duj.; MÜLLER, l. c. pp. 1 & 6.
- (*Globocephalus*, Molin. = *Ankylostomum*; v. LINSTOW (2).
- Heterakis brevicauda*, n. sp. in *Lucioperca sandra*, Cuv., L. Balaton; RATZ, Centrbl. Bakter. (1) xxii, p. 450. *H. ornata*, n. sp. from *Stellio vulgaris*; v. LINSTOW, Arch. Naturg. lxiii, p. 29.
- H. venicularis*, Fröhlich; v. LINSTOW (3) p. 618.
- Monhystera pseudobulbosa* and *M. tatrica*, n. spp., 4th and 2nd Kohlbach L. resp., 2000 m. above sea-level, Hungary; DADAY, Termes. Fuzetek, xx, pp. 190 & 191; and Zool. Jahrb. Syst. x, p. 97.
- Mononchus macrostoma*, Bast., var. *armatus*, n. var., shore of L. Balaton; DADAY, Zool. Jahrb. Syst. x, p. 108.
- Monotus lacustris*, in Bohemia Lakes; FRITSCH & VAVRA, p. 51.
- Oxyuris mamillata*, n. sp. from *Plestiodon aldrovandi*, and *O. cincta*, n. sp. from *Stellio vulgaris*; v. LINSTOW, Arch. Naturg. lxiii, p. 30. *O. stossichi*, n. sp., intest. of *Hystrix cristata*, Massaua; SETTI, Atti Soc. Ligustica, viii, p. 241.
- Physaloptera celebs*, n. sp. from *Centetes caudatus*; *P. circularis*, n. sp. from *Mus rattus*, Madagascar, and *P. sp. ?* from *Erinaceus*; v. LINSTOW, Arch. Naturg. lxiii, p. 28. *P. dilatata*, Rud., from *Cynocephalus hamadryas*, description; STOSSICH (1).
- Prismatolaimus dolichurus*, de M., var. *bulbosus*, n. var., Triangle Lake, 1600 m. above sea-level, Kezsmark, Hungary; DADAY, Termes. Fuzetek, xx, p. 193.
- Simondsia paradoxa*, Cobb., from pig, anat. of ♂ and ♀; PIANA: from wild boar; COLUCCI & ARNONE; SONSINO (2).
- Spiroptera brauni*, n. sp. from Madagascan rat; v. LINSTOW, Arch. Naturg. lxiii, p. 30. *S. pigmentata*, n. sp., intest. of *Cercopithecus albigularis*, Sykes; v. LINSTOW, Arch. mikr. Anat. xlix, p. 608.
- Strongylus brauni*, n. sp., lung of *Viverra zibetha*, L.; v. LINSTOW, Arch. mikr. Anat. xlix, p. 611.
- S. trigonocephalus*, Rud., p. 11, and *S. nodularis*, Rud., (= *S. mondon*, v. Linst.) p. 1, description of mouth capsule and cirrhi; MÜLLER.
- Teratocephalus pallustris*, de M., var. *crassicauda*, n. var., Triangle Lake, Kezsmark, Hungary, 1600 m. above sea-level; DADAY, Termes. Fuzetek, xx, p. 194.
- Trichocephalus unguiculatus*, Rud.; v. LINSTOW (3) p. 618.
- Trichosoma modigliani*, n. sp., from intestine of *Trimeresurus formosus*, Schleg., Mentawai, and *T. sonsinoi*, n. sp., fr. intestine of *Zamenis viridiflavus*, comparison with the already known spp. inhabiting Ophidians; PARONA, Atti Soc. Ligustica, viii, pp. 380-385. *T. contortum*, Crepl.; v. LINSTOW (3) p. 618.
- Tripyla gigantea*, n. sp., Kleine Plattensee; DADAY, Zool. Jahrb. Syst. x, p. 101.

## (b) GORDIIDÆ &amp; MERMIDÆ.

- Chordodes*, amended definition of genus, 27 spp. recognised, including *C. ferox*, n. sp.; CAMERANO, Mem. Acc. Tor. xlvii, p. 389, and Zool. Anz. xx, p. 225. *C. festus*, n. sp., Cuenza, Ecuador; CAMERANO, Boll. Mus. Torino, xii, No. 293. *C. kallstenii*, n. sp., Cameroen; JÄGERSKIÖLD, Bih. Svenska Ak. xxiii, No. 7, p. 140. *C. talensis*, n. sp., Argentine Republic and Bolivia; CAMERANO, Boll. Mus. Torino, xii, No. 294, p. 2.

*Gordiidae*, splitting up of family into 4 genera, and enumeration of 27 spp. which cannot, as yet, be assigned to any of these; CAMERANO, Mem. Acc. Tor. xlvii, p. 389, and Zool. Anz. xx, p. 225.

*Gordius*, definition of genus, 13 spp. recognised; CAMERANO, l. c.—*G. granulosus*, n. sp., 23½ cm. long, free living ?, Madagascar; and *G. sp. ?* from *Polyspilota pustulata*; v. LINSTOW, Arch. Naturg. lxiii, p. 31.

*Mermis* *præmatura*, n. sp., from *Stenobothrus sp. ?*, Madagascar, containing embryos; and *M. acrididarum*, n. sp., 2 larvæ from *Orthocris sp. ?*; v. LINSTOW, Arch. Naturg. lxiii, p. 32.

*Parachordodes*, n. g. for 15 spp. of *Gordiidae*, including *P. kaschgaricus*, n. sp.; CAMERANO, Zool. Anz. xx, p. 227, and Mem. Acc. Tor. xlvii, p. 289.

*Paragordius*, n. g. for 4 spp. of *Gordiidae*; CAMERANO, l. c.

### B.—ACANTHOCEPHALA.

*Arhynchus hemignathi*, Shipl., rectification as to locality of attachment in host; SHIPLEY (2) p. 620.

*Echinorhynchus*, table of the 15 known spp., description of *E. carruccioi* and *E. paronai*, n. spp., and 5 other spp. from the Campagna Romana; CONDORELLI-FRANCAVIGLIA.—*E. curvatus*, n. sp. from *Plestiodon aldrovandi*, *E. ovocristatus*, n. sp. from *Centetes ecaudatus*, and *E. rotundatus* from *Centropus madagascariensis*; v. LINSTOW, Arch. Naturg. lxiii, pp. 33 & 34.

*Gigantorhynchus hamatus*, n. sp. from *Potamocheilus edwardsii*, and 3 other spp. from Madagascan mammals; v. LINSTOW, Arch. Naturg. lxiii, p. 33.

### C.—CHÆTOGNATHA.

*Krohnia foliacea* and *pacifica*, n. spp., Misaki Harbour; AIDA, Annot. zool. Japon. i.

*Sagitta neglecta*, and *regularis*, n. spp., Misaki Harbour, Japan; AIDA, l. c. *S. arctica*, n. sp., Seas of Greenland and Skagerak; AURIVILLIUS, Lilljeb. Festskr. pp. 188 & 195.

## V. HEMICHORDA (including *Phoronis*).

### TITLES.\*

268. HARMER, S. F. On the Notochord of *Cephalodiscus*. Zool. Anz. xx, pp. 342-346.

269. HILL, J. P. The *Enteropneusta* of Funafuti. Mem. Austral. Mus. (Sydney) iii. Part I, pp. 203-210, pl. ix.  
Part II, pp. 333-346, pls. xix-xxii.

270. MACBRIDE, E. W. The relationship of *Amphioxus* and *Balanoglossus*. P. Cambridge Soc. ix, pp. 309-313.

271. MASTERMAN, A. T. (1) On the Diplochorda.—1. The Structure of *Actinotrocha*.—2. The Structure of *Cephalodiscus*. Quart. J. Micr. Sci. xl, pp. 281-366, pls. xviii-xxvi.

\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

272. [MASTERMAN, A. T.] (2) On the "Notochord" of *Cephalodiscus*. Zool. Anz. xx, pp. 443-450.
273. \*SCHULTZ, E. Obrazovanie mezodermui u *Phoronis*. [On the formation of the mesoderm in *Phoronis*.] Trudui St Petersburg. Protok., 1897, pp. 31-34, 3 figg. German Resumé, pp. 47-50. Abstract Zool. CB. iv, pp. 781 & 782.
274. SPENGLER, J. W. Bemerkungen zu A. T. Masterman's Aufsatz "On the 'notochord' of *Cephalodiscus*" in No. 545 des Zoologischen Anzeigers. Zool. Anz. xx, pp. 505 & 506.
275. WILLEY, A. (1) On *Ptychodera flava*, Eschscholtz. Quart. J. Micr. Soc. xl, pp. 165-184, pl. v.
276. —. (2) *Spengelia*; a new Genus of *Enteropneusta*. T. c. pp. 623-630, pl. xlvii.
277. —. (3) Some zoological Results of a voyage to Melanesia during the years 1894-1897. P. Cambridge Soc. ix, pp. 397-400.

## BIOLOGY.

MACBRIDE discusses the relationship of *Balanoglossus* and *Amphioxus*, criticising Lwoff's description of the development of coelom and mesoderm in *Amphioxus*. SCHULTZ discusses the relationship of the *Enteropneusta* as a whole to the Ectoproctous Bryozoa, coming to no very definite conclusion. He describes the formation of the mesoderm in a species of *Phoronis* occurring near Sebastopol. It is apparently formed by the arrangement of mesenchyme cells into an epithelium, and would therefore have a different origin to what it has in the species whose development has been described by Caldwell. Schultz does not give the name of his species.

The anatomy of *Cephalodiscus* is fully described by MASTERMAN (1), and compared with that of the *Actinotrocha*-larva of *Phoronis*.

The homology of the "notochord" of *Cephalodiscus* with the "proboscis gland" of *Balanoglossus* and "subneural gland" of *Actinotrocha*, maintained by Masterman, is disputed by HARMER, who still regards it as homologous with the "Eicheldarm" of *Balanoglossus*. MASTERMAN (2) upholds his own views and criticises some of the figures in Spengel's monograph. SPENGLER objects to these criticisms.

The relationships of the different genera of *Enteropneusta* to one another are discussed by WILLEY (1, 2 & 3). He concludes, in opposition to Spengel, that the genus *Ptychodera*, with an outer layer of circular muscles and synapticulæ, is the most primitive, then follow *Schizocardium* and *Glandiceps*, with an inner layer of circular muscles and no synapticulæ, *Balanoglossus*, characterised by the absence of circular muscles and of synapticulæ, being the least primitive. He describes a new genus, *Spengelia*, resembling *Glandiceps*, but approaching *Ptychodera* in the possession of synapticulæ and of the remains of dorsal-roots arising from the collar nerve-cord, and especially characterised by a well-defined layer of splanchnic nerve-fibres round the buccal cavity and oesophagus, and by the occurrence on each side of the dorsal median line of a series of deep dermal pits in the post-branchial region of the body. He proposes (2) the term "proboscis-cæcum" for the process extending forward from the anterior end of the notochord in *Glandiceps* and *Schizocardium* ("Eicheldarm" aut.).

HILL (Pt. II) describes a new species of *Ptychodera* without circular muscles in the trunk and having its genital-pleuræ rudimentary, with the dorsal diverticula of the intestine glandular, with the two longitudinal

ciliated grooves of the intestine covered by epidermis, and with the axial-canal in the dorsal nerve-cord opening to the exterior both anteriorly and posteriorly.

## DISTRIBUTION.

*Ptychodera flava*, Esch., on Funafuti Atoll, off Noumea (New Caledonia), and from a rock-pool on Lifu (Loyalty Is.), on the I. of Admédée (inside Great Barrier Reef of New Caledonia), and I. of Pines; HILL; and WILLEY (1) & (2).

## SYSTEMATIC.

*Ptychodera* (s. str.) *hedleyi*, n. sp., Funafuti Atoll, external and internal anatomy; HILL, Mem. Austral. Mus. iii, pp. 203 & 333.

*P. caledoniensis*, provisional new species, for what is probably to be identified with *P. (chlamydothorax) flava*, Esch., I. of Admédée (inside Great Barrier Reef of New Caledonia), and I. of Pines; WILLEY, Quart. J. mikr. Sci. xl, p. 182. HILL, finding the same species on Funafuti Atoll, identifies it with *P. flava*, Esch., and WILLEY (2) accepts this identification, with the proviso, that if it should not turn out to be the same as the species occurring in the Marshall Is. (the original locality of Eschscholtz' species) the latter will have to be renamed.

## VI. ROTIFERA AND GASTROTRICHA.

### TITLES.\*

278. BRYCE, D. Contributions to the non-marine fauna of Spitzbergen. Part ii. Report on the *Rotifera*. P. Zool. Soc. London, 1897, pp. 793-799.
279. \*COLLIN, A. Eingeweidewürmer und Räderthiere. Die Thierwelt Ost-Africas, iv, Lfz. v, Berlin (Dietr. Reimer), 1897, 13 pp. and 14 figg. in text.
280. DADAY, J. (1) Új-Guineai Rotatoriák (*Rotatoria* Novæ Guinææ). Math. term. Ertes. xv, pp. 131-148, 12 figg.
281. \*——. (2) Rotatorien [des Plattensees]. Result. wiss. Erforsch. Balatonsees, pp. 123-133. (See Zool. Anz. xx, p. 620.)
282. ———. (3) Beiträge zur Kenntniss der Microfauna der Tátarseen. Termes. Füzetek, xx, pp. 149-196.
283. DUNLOP, M. F. On *Metopidia pterygoida*, a new Rotifer. J. Quekett Club, vi, pp. 325-327, pl. xvii.
284. ERLANGER, R. & LAUTERBORN, R. Ueber die ersten Entwicklungsvorgänge im parthenogenetischen und befruchteten Räderthier-ei (*Asplanchna priodonta*). Zool. Anz. xx, pp. 452-456.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

285. FRANCÉ, R. A *Brachionus quadratus*, Rouss. szervezete. Potfuz. Termes. Kozl. xliv, pp. 206-218, 8 figg.
286. JENNINGS, H. S. The early development of *Asplanchna herricki*, Guerne: a contribution to developmental mechanics. Bull. Mus. Harvard, xxx, pp. 1-118, pls. i-x.
  - I. Mechanics.
  - II. Morphology of the Rotifera.
  - III. Materials and methods.
287. KELLICOTT, D. S. The *Rotifera* of Sandusky Bay. (2nd paper.) Tr. Amer. micr. Soc. xix, pp. 43-54, 3 figg.
288. LAMEERE, A. Notes du laboratoire de biologie ambulante de l'université de Bruxelles, i. Expédition à Kinroy. Ann. Soc. Belg. Micr. xxi, pp. 33-41.
289. LEUSSEN. Sur la présence de Sporozoaires chez un Rotateur. Zool. Anz. xx, pp. 330-333.
290. NUSBAUM, M. Ueber Versuche, das Geschlecht an einem Rädertiere, *Hydatina senta*, willkürlich zu bestimmen. SB. niederrhein. Ges., 1896, p. 40. Full paper, Arch. mikr. Anat. xlix, pp. 227-308. Abstract, J. R. micr. Soc. 1898, pp. 306-308.
291. PITARD, E. Sur le Plankton du lac de Chavonnes. Arch. Sci. Nat. (4) iii, 3 pp.
292. ROUSSELET, C. F. (1) *Brachionus bakeri* and its varieties. J. Quekett Club, vi, pp. 328-332, pl. xvi.
293. —. (2) On the male of *Proales wernecki*. T. c. pp. 415-418, pl. xix. [See also two papers in J. R. micr. Soc. recorded last year.]
294. SADONES, —. Zur Biologie (Befruchtung) der *Hydatina senta*. Zool. Anz. xx, pp. 515-517.
295. SCHERREN, H. Rotifers commensal with Caddis-worms. Nature, lvi, p. 224.
296. SHEPHARD, J. A new Rotifer, *Lacinularia elliptica*. Victorian Natural. xiv, pp. 84-86, pl. i.
297. STOKES, A. C. Some new forms of American Rotifera, II. Ann. Nat. Hist. xix, pp. 628-633, pl. xiv.
298. VANHÖFFEN, E. Die Fauna und Flora Grönlands. Grönl. Exped. d. Ges. Erdkunde zu Berlin, 1891-1893, Berlin (Kühl), 4to., 1897, II. Pt. 1.
  - iv. Kap. Wirbelloser Landtiere und Süßwasserplankton, pp. 175-223.
  - vi. Das Plankton des Karajak-Fjordes (Rotifers, p. 276).
299. WEBER, E. F. Note sur quelques mâles de Rotateurs. Rev. Suisse Zool. v, pp. 91-99, pl. iv.
300. ZACHARIAS, O. (1) Neue Beiträge zur Kenntniss des Süßwasser planktons. Forschber. Plon, v, pp. 1-9, pl. i.
301. —. (2). Zur Mikrofauna der Sandforter Teiche. T. c. pp. 112-114.
302. ZOGRAF, N. DE. Sur une méthode de préparation des Rotateurs. C.R. Ac. Sci. cxxiv, pp. 245 & 246.

## BIOLOGY.

The early development (maturation of egg, orientation, cleavage, and gastrulation) of *Asplanchna herrickii*, de Guerne, considered from the

mechanical point of view, but found not to be determined by any simple mechanical factors or relations of form; JENNINGS.

The first stages in development (formation of centrosomes, nutrition of ovum, and its maturation) in the three kinds of ova, viz.:—the parthenogenetic ones which become females, the parthenogenetic ones which become males, and the fertilized ones which become winter eggs—, of *Asplanchna priodonta*; ERLANGER & LAUTERBORN. Experiments for producing the different kinds of eggs at will in *Hydatina senta*, shewing that a female, when well fed after leaving the egg, produces females parthenogenetically and continues so to do even if it is afterwards badly fed, whereas if badly fed to begin with male eggs are produced parthenogenetically however the after-conditions be changed; NUSBAUM. The influence of the oxygenation of the water on rate of development and of temperature on the number of eggs produced is also shewn experimentally.

Impregnation of the ova in *Hydatina senta*, the spermatozoa boring their way through the membrane of the ovary from the cœlom of the female, into which they were injected by the male; SADONES [compare a similar process in a Turbellarian, p. 22 of this record].

Sporozoa (stages of *Euglena*?) parasitic in intestinal cells of *Hydatina senta*; LEUSSEN.

Commensalism: of Rotifers with caddis worms; SCHERREN.

Tube-building of *Melicerta ringens*. Int. J. Micr. (3) vii, pp. 285–287.

Method of producing rotifers: modification of Roussetlet's; ZOGRAF.

## GEOGRAPHICAL DISTRIBUTION.

Spitzbergen: Fresh-water rotifers, 19 species *Bdelloida*, 6 *Ploima*, in ponds which often frozen for nine months of the year; BRYCE.

Greenland: 84 species of fresh-water Rotifers, 4 of them new to Greenland; VANHÖFFEN, p. 175, &c.; presence of *Synchaeta baltica* and *Mustigocerca stylata*, Gosse, which only known before in the North Sea and Baltic; VANHÖFFEN, p. 276.

Arran: a new Rotifer; DUNLOP.

Schleswig-Holstein: rotifers; ZACHARIAS (1). Ponds of Sandfort, 14 species; ZACHARIAS (2).

Belgium: Kinroy: 6 spp. *Rhizota*, 8 spp. *Bdelloida*, and 23 spp. *Ploima*; LAMEERE.

Switzerland: Rotifers of L. of Chavonnes; PITARD. Geneva neighbourhood: 6 male rotifers, not previously described; WEBER.

Hungary: L. Balaton: 41 species (12 new); DADAY (2). 18 Lakes in the Tatra Mountains: 23 species rotifers; DADAY (3).

New Guinea: list of species; DADAY (1).

E. Africa: 16 spp. Rotifers (5 new), and 3 *Gastrotricha* (1 new); COLLIN.

America:—New Jersey: shallow pool near Trenton, 6 new species; STOKES. L. Erie: Sandusky Bay: enumeration of 39 additional species making a total of 106 species; KELLICOTT.

## SYSTEMATIC.

### A.—ROTIFERA, s.s.

*Asplanchna papuana*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 132.

*A. priodonta*, development of parthenogenetic and fertilised eggs; ERLANGER & LAUTERBORN. *A. herrickii*, early development, includ-

- ing gastrulation, up to a later stage than hitherto described for other Rotifers; JENNINGS.
- Brachionus mirabilis* and *papuanus*, n. spp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, pp. 140-143. *B. tetracanthus*, n. sp., Victoria Nyanza, near Djuma I.; COLLIN, Thierwelt Ost-Afr. iv, Lf. v, p. 8.
- B. bakeri*, O. F. M., definition of species, the type-species and 8 varieties described and figured, 5 ancient and 8 more recent species referred to it as varieties; ROUSSELET. *B. quadratus*, Rouss., anatomy; FRANCE.
- Callidina venusta*, n. sp., for (*Macrotrachela elegans*, Milne); BOYCE, P. Zool. Soc. London, p. 796.
- Cathypna glandulosa*, n. sp., and *C. scutaria*, n. sp., shallow pool near Trenton, N. J.; STOKES, Ann. Nat. Hist. xix, pp. 631 & 632.
- Copeus labiatus*, Gosse, near Geneva, description of ♂; WEBER, p. 92.
- Diarthra*, n. g. with a horn-like process on each side of the body anteriorly, for *D. monostyla*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 143.
- Diglena contorta*, n. sp., shallow pool near Trenton, N. J.; STOKES, Ann. Nat. Hist. xix, p. 630.
- D. forcipata*, Ehr., near Geneva, description of ♂ (1 specimen); WEBER, p. 94.
- Dinocharis pocillum*, Ehr., near Geneva, description of ♂; WEBER, p. 96.
- Diplax ornata*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 135.
- Diplois sculpturata*, n. sp., New Guinea; DADAY, t. c. p. 135.
- Euchlanis longicaudata*, n. sp., Bukoba; COLLIN, t. c. p. 6.
- Hydatina senta*, parasites of; LEUSSEN.—Experiments in producing sex; NUSBAUM.—Impregnation of ova; SADONES.
- Lacunararia elliptica*, n. sp., Lagoon near the Yarra River, Heidelberg, Victoria; SHEPARD, Vict. Nat. xiv, p. 84.
- (*Macrotrachela elegans*, Milne) = *Callidines venusta*, n. sp.; BRYCE.
- Mustigocerca hamata*, n. sp., pond near Tillowitz in Upper Schleswig; ZACHARIAS, Forschber. Plou, v, p. 8. *M. multicrinis*, n. sp., Sandusky Bay, closely allied to *M. lata*; KEL LICOTT, Tr. Amer. micr. Soc. xix, p. 50. *M. spinigera*, n. sp., shallow pool near Trenton, N. J.; STOKES, Ann. Nat. Hist. xix, p. 631.
- Megalotrocha binotata*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 133.
- Metopidia pterygoida*, n. sp., pool, 500 ft. above sea-level, Arran; DUNLOP, J. Quekett Club, vi, p. 325.
- Monostyla bicornis*, *incisa* and *pygmaea*, n. spp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, pp. 136-139. *M.*, 2 spp. (nov. ?), Bukoba; COLLIN, Thierwelt Ost-Afr. p. 7.
- Notus stuhlmanni*, n. sp., Bussisi; COLLIN, t. c. p. 8.
- "*Notommata*" *vorax*, n. sp., more probably the type of a n. g. (to include also *Taphrocampa clavigera*, Stokes), shallow pool near Trenton, New Jersey; STOKES, Ann. Nat. Hist. xix, p. 628.
- Pedation mirum*, in Holstein Lakes, and in several ponds in both Schleswig and Holstein; ZACHARIAS (1) p. 8.
- Philodina* (! ?) *emini*, n. sp., Bukoba; COLLIN, t. c. p. 4.
- Plesoma truncata*, n. sp., Sandusky Bay (surface); KEL LICOTT, Tr. Amer. micr. Soc. xix, p. 47.
- Proales algicola*, n. sp. in mucilaginous matrix of *Anabena gelatinosa* (an Alga), Sandusky Bay; KEL LICOTT, Tr. Amer. micr. Soc. xix, p. 48.
- P. hyalina*, n. sp., shallow pool near Trenton, New Jersey; STOKES, Ann. Nat. Hist. xix, p. 629.
- P. (Notommata) wernecki*, Ehr., figures of ♂ with further description; ROUSSELET (2).



- Rotifer*, sp. (nov. ?), Bukoba; COLLIN, *l. c.* p. 4.  
*Sacculus orbicularis*, n. sp., Biemüller's Cove, Sandusky Bay; KELLICOTT,  
Tr. Amer. micr. Soc. xix, p. 46.  
*Salpina brevispina*, Ehr., and *S. mucronata*, Ehr., description of ♂s;  
WEBER, p. 98.  
*Scaridium longicardium*, Ehr., near Geneva, description of ♂, from 2  
specimens; WEBER, p. 97.  
*Stephanops tenellus*, n. sp., Spitzbergen; BRYCE, P. Zool. Soc. London, p.  
798.

## B.—GASTROTRICHA.

- Chatonotus ornatus*, n. sp., New Guinea; DADAY, Math. term. Ertes.  
Magyar Ak. xv, p. 145. *C.*, 2 spp., Bukoba; COLLIN, *l. c.* p. 9.  
*Ichthyidium macrurum*, n. sp., Bukoba; COLLIN, *l. c.* p. 9.  
*Lepidoderma birói*, n. sp., New Guinea; DADAY, Math. term. Ertes.  
Magyar Ak. xv, p. 147.

## VII. MESOZOA.

(*Nothing.*)

## XVI. CŒLEENTERATA.

[VACANT.]

It is intended that the literature of 1897 shall be given in the next  
Volume together with that of 1898.



## XVII. SPONGIÆ.

BY

PROFESSOR R. VON LENDENFELD.

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## INTRODUCTION.

THE most important papers on Sponges published in 1897 are:—(26) in which MINCHIN discusses the different views on the nature of Sponges and their position in the animal kingdom; (6) in which DÖDELEIN publishes a detailed description of his *Petrostroma*; (14) and (34) in which IJIMA and F. E. SCHULZE treat of Hexactinellids; (21) in which LENDENFELD publishes the results of his researches on the Adriatic *Clavulina*; (5), (20) and (37) in which DENDY, LENDENFELD and TOPSENT describe a number of new species from the South Coast of Australia, Zanzibar and Amboina, respectively; (32) in which ROUSSEAU acquaints us with a new method of

dissolving the spicules without injury to the histological structure; and (29) and (42) in which OPPLIGER and ZEISE respectively describe a number of new Fossil Sponges.

## I. TITLES.\*

1. AUSTEN, E. Notes on a recent zoological expedition on the Lower Amazon. P. Zool. Soc. London, for 1896, pp. 768-779.  
BRANDT, K. (7) Zool. Rec. 1896. Summary: J. R. Micr. Soc. 1897, p. 116.
2. —. Die Fauna der Ostsee, insbesondere die der Kieler Bucht. Verh. Deutsch. zool. Ges. vii, pp. 10-34. (Sponges, p. 18.)  
BREITFUSS, L. (9) Zool. Rec. 1896. Summary: J. R. Micr. Soc. 1897, p. 44.  
— (10) Zool. Rec. 1896. Summary: J. R. Micr. Soc. 1897, p. 44.
3. —. *Ascandra hermesi*, ein neuer homocöler Kalkschwamm aus der Adria. Zeitschr. wiss. Zool. lxiii, pp. 39-42, 2 figg. Summary: Zool. Centralbl. iv, p. 913.
4. —. Kalkschwämme von Ternate. (Kükenthal, Ergebnisse einer zoologischen Forschungsreise in den Molukken und Borneo.) Abh. Senckenb. Ges. xxiv, pp. 169-177.  
DENDY, A. (15) Zool. Rec. 1895. Summary: J. R. Micr. Soc. 1897, p. 132.
5. —. Catalogue of non-calcareous Sponges collected by J. Bracebridge Wilson, Esq., M.A., in the neighbourhood of Port Phillip Heads. Part III. P. Soc. Victoria, ix, pp. 230-259. Summaries: J. R. Micr. Soc. 1897, p. 541; Zool. Centralbl. iv, p. 686.
6. DÖDERLEIN, L. Über die Lithonina, eine neue Gruppe von Kalkschwämmen. Zool. Jahrb. Syst. x, pp. 15-32, pls. 2-6. Summaries: J. R. Micr. Soc. 1897, p. 299; Zool. Centralbl. iv, pp. 515 & 516.
7. DUN, W. Note on the occurrence of Sponge-remains in the lower Silurian of New South Wales. P. Linn. Soc. N. S. Wales, xxii, pp. 436 & 437.
8. \*ELERA, R. DE. Catálogo sistemático de toda la Fauna de Filipinas conocida hasta el presente, y á la vez el de la colección zoológica del Museo de PP. Dominicos del Colegio-Universidad de St. O. Tomás de Manila. Vol. iii, Molluscos y Radiados. (Sponges, pp. 844-846.)
9. FRANCÉ, R. [The *Craspedomonada*, in Hungarian.] Budapest, 1897, viii and 112 pp., 78 figg. Transl. into German. Budapest, 1897, 123 pp., 78 figg. (Sponges, pp. 192-194 in the German translation.)
10. FRIČ, A. & VÁVRA, V. Untersuchungen über die Fauna der Gewässer Böhmens, iii. Arch. Landesf. Böhmen, x, 74 pp., 33 figg.
11. GARBINI, A. Due Spongille del Lago di Garda nuove per l'Europa. Zool. Anz. xx, pp. 477 & 478.  
GRANGER, A. (17) Zool. Rec. 1896. Summary: Zool. Centralbl. iv, pp. 402 & 403.

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\* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to. The titles without date refer to papers published in 1897; to the titles of papers omitted in last year's record, and now given, the date (1896) is attached.

12. GÜNTHER, A. (On the exploration of the deep sea. Presidential Address.) P. Linn. Soc. London, 1896, 1897, pp. 17-54.  
HAECKEL, E. (18) Zool. Rec. 1896. Summary: Zool. Centralbl. iv, pp. 608-612.
13. HOERNES, R. Die Fauna des Baikalsees und ihre Reliktenatur. Biol. Centralbl. xvii, pp. 657-664. Summary: Zool. Centralbl. iv, p. 825.
14. IJIMA, J. Revision of Hexactinellids with Discocasters, with descriptions of five new species. Annot. zool. Japon. i, pp. 43-59. Summaries: J. R. Micr. Soc. 1897, pp. 393 & 394; Zool. Centralbl. iv, pp. 745 & 746.
15. KIESCHNICK, O. Berichtigung. Zool. Anz. xx, p. 28.  
KIRK, H. (25) Zool. Rec. 1896. Summary: Zool. Centralbl. iv, p. 516.
16. \*LAMPERT. Das Leben der Binnengewässer. Leipzig, 1897.  
LENDENFELD, R. v. (29) Zool. Rec. 1896. Summary: Zool. Centralbl. iv, p. 231.
17. —. Note on some Sponges from the Auckland Islands. Ann. Nat. Hist. (6), xix, p. 124.
18. —. Der Thierstamm der Spongien. Zool. Garten, xxxviii, pp. 6-13, 44-51, 71-80 (sep. pp. 1-24), 36 figg.
19. —. (Notes on Rockall Island and Bank.) On the Spongida. Tr. Irish Ac. xxxi, pp. 82-88, 4 figg.
20. —. Spongien von Sansibar. (Voeltzkow, wissenschaftliche Ergebnisse der Reisen in Madagaskar und Ostafrika.) Abh. Senckenb. Ges. xxi, pp. 93-133, pls. 9 & 10.
21. —. Die *Clavulina* der Adria. Acta Ac. German. lxi, pp. 1-251, pls. 1-12 (dated 1896, appeared 1897).  
LEVANDER, K. (44) Zool. Rec. 1895. Summary: Zool. Centralbl. iv, p. 51.
22. LINDGREN, N. Beitrag zur Kenntniss der Spongienfauna des Malaischen Archipels und der Chinesischen Meere. Zool. Anz. xx, pp. 480-487.
23. \*LOISEL, G. Contribution à la physiologie et à l'histologie des Éponges. C.R. Soc. Biol. (10), iv, pp. 934 & 935 (preliminary report).
24. MARSHALL, W. Die deutschen Meere und ihre Bewohner. Kleine Ausgabe, zugleich als naturhistorisches Vademecum für Besucher deutscher Seebäder. Leipzig, 1897, v and 394 pp. (Sponges, pp. 44-47.)  
MINCHIN, E. (36) Zool. Rec. 1896. Summaries: J. R. Micr. Soc. 1897, pp. 43 & 44; Zool. Centralbl. iv, pp. 230 & 231.
25. —. *Ascandra* or *Homandra*? A test case for the rules of Zoological nomenclature. Zool. Anz. xx, pp. 49 & 50. Summary: Zool. Centralbl. iv, p. 231.
26. —. Position of Sponges in the animal kingdom. Sci. progress, i, pp. 426-460 (sep. pp. 1-35). Summaries: J. R. Micr. Soc. 1897, p. 293; Zool. Centralbl. iv, pp. 910-913.
27. MOORE, J. The Freshwater fauna of Lake Tanganyika. Nature, lvi, pp. 198-200, 2 figg.
28. NÖLDEKE, B. Porifera. Zool. Jahresber. 1896, 7 pp.

29. OPPLIGER, T. Die Juraspongien von Baden. Abh. Schweiz. pal. Ges. xxiv, 58 pp., 11 pls.
30. PARKER, T. & HASWELL, W. A text-book of zoology. London, 1897. (Sponges, Vol. I, pp. 86–117, figg.)
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## II. BIOLOGY.

### 1. MORPHOLOGY and PHYSIOLOGY.

#### A. GENERAL [cf. Titles 18, 21, 26, 28, 30, 39].

LENDENFELD (21) does not consider it feasible to assume that—in the *Clavulina* at least—a Sponge is composed of as many “individuals” as there are oscules.

## B. CANAL-SYSTEM [cf. Titles 20, 21].

LENDEFELD (21) finds the inhalant pores of *Tethya* situated on the sides of the inverted cones which protrude from the surface. In *Placospongia* these pores are confined to the bandshaped zones free from Pseudosterrasters, that separate the superficial armour-plates from each other. In *Vioa*, *Papillella* and *Latrunculia* they are situated on the summits of the papillae. In *Vioa* they sometimes form a ring round an osculum. In certain free forms of *Vioa viridis* (*Osculina polystomella*, O. Schmidt) the poregroups are, like the oscules, surrounded by serrated lips. In the cortex of his new *Cinachyra voeltzkowi*, LENDEFELD (20) has found the same ovoid cavities with perforated walls which Sollas had previously described in *Cinachyra barbata*. According to Sollas, there are no other pores than the pores in the walls of these cavities, whilst LENDEFELD found pores also on the exposed parts of the surface. He therefore does not consider (as Sollas had done) the ovoid cavities as partly belonging to the inhalant system, but assumes that all these cavities belong to the exhalant system and that the pores on the exposed parts are the inhalants.

LENDEFELD (21) finds the inhalant canals of *Vioa*, *Papillella* and *Tethya* just below the surface narrow and slit-like. The *Vioas* and *Papillellas* are traversed by wide, branching canals which probably anastomose and in some forms have a vestibular character: inhalant canals arising from them and oscular apertures opening out into them. In *Vioa ramosa* these canals attain a width of 4 mm.

The ciliated chambers of *Clavulina* are, according to LENDEFELD (21) mostly spherical and 0·02—0·05 mm. in diameter. The smallest chambers are those of the *Suberitidae*.

The oscular tubes of *Astromimus luteus* pervade, according to LENDEFELD (21), the whole of the massive Sponge in the shape of straight and wide vertical canals. They are very numerous and run close together, side by side. The oscules of several species of *Vioa* and *Papillella* are covered with sievemembranes and surrounded by serrated lips.

## C. SKELETON [cf. Titles 6, 14, 20, 21, 34, 35].

According to DÜDERLEIN (6) the skeleton of *Petrostroma schulzei* is composed of a firm network and of free spicules, both of carbonate of lime. The network is structurally and genetically similar to the network of siliceous rods forming the skeleton of the Dictyonine Hexactinellids. It consists of stout triactines firmly cemented together by carbonate of lime. During the cementing process the shape of these triactines is entirely lost. Herein *Petrostroma* differs from the fossil *Pharetrones*. Among the free spicules the two-pronged forks—they are triactines—which form bundles are particularly interesting as occurring only in *Petrostroma*, *Lelapia* and the *Pharetrones*.

In spite of the fact that sometimes, as for instance in *Asteropus incrustans* and *Vioa vastifica*, so many spicules of all transitional dimensions are met with, that no sharp limit can be drawn between the Megascleres and the microscleres, LENDEFELD (21) thinks that this distinction should be upheld. It shows however that there is no real, qualitative, difference between the large (megascleres) and the small (microscleres) spicules of siliceous sponges.

F. E. SCHULZE (35) draws attention to the fact that the shape of some Hexactinellid spicules indicates certain relations to crystals of the regular system. Thus the Discostaster-rays of *Acanthascus* and *Rhabdocalypus* mark the positions of the corners of a cube; the oblique connecting rods at the joining-points of the dictyonal network of *Autocystis* etc. represent



the edges of an octahedron; and the terminal branches (spines) of the hexactin-rays of *Lophocalyx philippensis* and the terminal hooks of the oxyhexactin-rays in *Hyalonema apertum* and *Bathydorus uncifer* (n. sp.) appear to be situated in the secondary symmetry-planes of the regular crystal-system.

IJIMA (14) corrects some statements concerning Hexactinellid spicules.

The microscleres of Tetractinellids and *Clavulina* usually form—when present at all—an armour on the external surface and are here generally much more numerous than in the interior. Only in species of *Vioa* LENDENFELD (21) finds the microscleres confined to the interior and absent in the cortex.

All the megascleres of the *Clavulina* have, according to LENDENFELD (21) an axial thread, which in the tylostyls widens out in the centre of the "head" to form a head-nucleus. This nucleus is composed of the same substance as the thread and contains granules of various sizes. If the "head" is not situated terminally, the axial thread is continued beyond the head-nucleus. In the monactine spicules the axial thread terminates abruptly some distance from the blunt end. The relative thickness of the spicules and the position of the head in the tylostyls (whether terminal or not terminal) are subject to considerable variation even within one and the same specimen, so that these characters cannot be used for systematic purposes to such an extent as was formerly supposed. The Clavuline megascleres are on an average 60 times as long as thick. The stoutest spicules (1 : 34) were met with in *Suberites aaptus*; the most slender (1 : 200) in *Stelligera nux*.

It is according to LENDENFELD (21) a remarkable fact that the pointed end of the radial monactines is in the *Clavulina* always situated distally, whilst the point of the shaft of the radial triaens of Tetractinellids, from which the Clavulina-monactines are supposed phylogenetically to have been developed, is always directed inwards. In *Clavulina* the monactines very often project beyond the surface and form a sort of fur. LENDENFELD (21) also considers the large spicules forming the halo in *Trichostemma* as such radial "fur-spicules" (Pelznadeln) and not as tangential spicules. The same applies to *Tentorium*. Really tangential megascleres are found in the dermal layer of *Suberanthus*, *Polymastia* and other genera. In the boring forms of *Vioa* and *Papillella* the megascleres are very much more numerous in the exposed portions of the sponge, than in the interior. Also in *Polymastia* the spicules are very much more numerous in the cortex than in the pulpa.

The following new spicule-names have been introduced :

Pseudosterraster (LENDENFELD, 21): thick sausage-shaped, Sterraster-like Spicule developed from a Spiraster.—Strongylaster (LENDENFELD, 21): Euaster with cylindrical, blunt rays.—Centrotyl (LENDENFELD, 21): a small rod with a swelling at or near the centre.—Microrrhald (LENDENFELD, 21): a small cylindrical rod blunt at each end.—Discospiraster (SCHULZE, 34): Discohexaster with spirally wound terminal rays.—Aspidoplumicom (SCHULZE, 34): Plumicom with shield-like basal plates.—Rhopalaster (SCHULZE, 34): large Hexaster with club-like terminal rays.—Subtylostyl (LENDENFELD, 21): Tylostyl, the head of which is barely thicker than the shaft.

#### D. EPITHELIA, CUTICULA [cf. Titles 20, 21].

LENDENFELD (21) finds a well-developed cuticle on those surfaces of boring *Vioa*- and *Papillella*-specimens that are in contact with the stones, shells, etc. in which they dwell. This cuticle is comparable to the basal sponginplate of Horny Sponges. In preserved specimens of *Chondrilla* a continuous cuticle was found on the outer surface covering all the

inhalant pores and interrupted only at the oscules. In *Chondrilla nucula* the portions of this cuticle covering the pores show fine transverse (radial) lines which perhaps are the expression of slender tubes traversing this cuticle in the living sponge.

LENDEFELD (20, 21) thinks that the recent researches on Sponge-epithelia tend to demonstrate their diversity in different species. In *Suberites fugax* and *Polymastia robusta* he finds (21) a simple "Platten-epithel"; in *Suberites massa* thin and flat ("Platten") cells which here however possess processes extending down into the interior of the sponge. On the surface of *Phacellia weltneri* (20) massive, granular pavement-cells with centripetal processes were met with. Somewhat similar cells, much blackened by osmic acid, occur in *Papillella quadrata*. "Flask"-cells were observed by LENDEFELD (20) on the surface of *Phyllospongia dendyi* var. *spiculifera* and *Stelospongia operculum*. These cells are similar to the "flask-shaped cells" discovered by BIDDER in a horny sponge from Naples. The dermal cells of *Phyllospongia dendyi* are however not all flask-shaped: some are destitute of the neck and adhere with a broad base to the superficial plate to which they belong. All these cells have processes extending into the interior of the sponge.

Large multipolar, granular cells underlie the cuticle in *Vicia* and *Papillella* (21).

The inhalant pores of *Azinyssa topsentii* (21) are surrounded by ring-shaped cells; these pores are intracellular.

In the canal-walls of many *Clavulina* (21) a single layer of low, flat ("Platten") cells has been observed. Sometimes stouter pavement or cylindrical cells were met with in the canal-walls of *Vicia*, *Astromimus* and the oscular tubes of *Papillella*.

The flagella of the collar-cells often cross in the centre of the chamber, being more than half as long as the diameter of the latter (21). In sections they sometimes appear joined to form a sort of plasmodium in the centre of the chamber. In several cases processes were observed arising from the corners of the polygonal bases of the collar-cells and extending for some distance tangentially.

Free on the surface of the canals readily stained cells were observed in several *Clavulina* (21). Some of these had a nucleus, in others a nucleus could not be made out. These cells might be compared to Masterman's nephrocytes.

#### E. CHONES [cf. Title 21].

When SOLLAS made us properly acquainted with the chones in Tetractinellids, they were supposed to be confined to that order. LENDEFELD then discovered them in an Australian Monaxonid and established for this species, in consequence of its possession of chones, the new family *Sollasellidae*. Now (21) LENDEFELD has found well developed chones in quite a number of monaxonid, clavuline Sponges, so that their presence in that Australian species can no longer be considered as a reason sufficient for separating it from the other Monaxonids. The chones of *Tethya* are situated in the floors of the cortical cavities. Both in the inhalant and in the exhalant system chones are met with. The *Tethya*-chones consist of an inner zone of roundish, massive cells, a middle zone of radial, and an outer zone (ring) of circular spindle-cells. In *Polymastia* the lacunæ occupying the fistular processes are separated from the canals of the interior by membranes in each of which one or more chones are situated. These chones consist chiefly of circular spindle-cells. In several species of *Vicia* and *Papillella* large chones were observed at the level of the limit between cortex and pulpa. These chones are generally simple; sometimes, however, as in *Vicia vastifica* two or three chones are found

together in a group connecting a cortical cavity with a canal of the interior. The subcortical chones of *Vioa* and *Papillella* consist of an inner zone of massive cells and an outer ring of circular spindle-cells. Outside the latter radial spindle-cells are observed traversing the longitudinal spicule bundles which usually surround the chones. Transverse membranes traverse the main canals of *Vioa* and *Papillella* at frequent intervals. These membranes are thickened towards the centre and perforated in the middle. They are (in *Vioa*) covered with numerous scattered microscleres and composed of an inner zone of massive, often radially elongated, more or less cylindrical cells, a middle zone of circular spindle-cells and outer zone of radial spindle-cells, occupying the distal, thin portion. In consequence of their similarity to the chones LENDENFELD has named these structures "chonal membranes." Doubtlessly the radial and the circular spindle-cells of all these chones and chonal membranes are to be considered as contractile elements, the former as dilatatores and the latter as constrictores of the chonal canal.

#### F. CORTEX [cf. Titles 20, 21].

In most *Clavulina* LENDENFELD (21) finds a cortical layer destitute of ciliated chambers. In *Tethya*, in some species of *Suberites*, in *Placospongia*, etc. this layer is dense and fibrillar. In *Suberanthus*, *Astromimus*, etc. the cortex is so rich in lacunose cavities, that it appears more or less foam-like. The fistulose appendages of *Polymastia* are composed of an inner lacunose, foam-like tissue and an outer dense fibrillar rind. The limit between cortex and pulpa is usually very well defined. Spindle-cells, probably of contractile nature, are often met with in the cortex, chiefly around the cortical canals. Sometimes radial dilatatores and circular constrictores can be distinguished. The soft tissue between the armour-plates of *Placospongia* consists chiefly of transverse fibres. In the cortex of *Suberites aaptus* two layers of nodulose masses of some organic, probably reserve-nourishing material are met with. Heaps of rounded granular cells, which may be young buds, are observed in the cortex of *Tethya*. In the cortex cells occur containing the pigment granules which give to the sponges their colour. Different *Clavulina* show a great diversity in the structure of their cortex (LENDENFELD, 20, 21).

#### G. PULPA [cf. Titles 20, 21].

LENDENFELD (21) finds the larger canals in many *Clavulina* surrounded by tissue similar to that of the cortex. Usually circular spindle-cells form the innermost layer of the canal wall. Sometimes also longitudinal and radial spindle-cells occur in the deeper layers. The longitudinal spindle-cells are met with chiefly round the canals which traverse the papillæ of *Vioa* and *Papillella* longitudinally. They cause the retraction of the papillæ.

Massive granular cells, probably spongioblastic in nature, were observed by LENDENFELD (21) overlying the basal sponginplate in *Suberites fugax*. In *Phyllospongia dendyi* LENDENFELD (20) observed long-necked spongioblasts similar to the superficial flask-cells. In the sections each of these spongioblasts appeared attached to a small sponginplate, the latest addition to the fibre, but these sponginplates were torn from the fibre by the action of the reagents employed and separated from it by a little space in the sections.

#### H. SEXUAL CELLS, PROPAGATION and DEVELOPMENT [cf. Titles 3, 21].

BREITFUSS (3) describes the ripe ovum of *Ascandra hermesii* as a sphere 0.17 mm. in diameter containing a large nucleus with one large and

several small chromatin-granules (nucleoli). A well defined endoplasmatic layer surrounds the nucleus.

According to LENDENFELD (21) the ova of *Vioa vastifica* possess pseudopodia and a large nucleus with a tangled chromatin thread.

LENDENFELD (21) describes groups of granular cells in the cortex of *Tethya* which are probably young buds.

### I. PHYSIOLOGY [cf. Title 21].

The fact that the surfaces of boring sponges in contact with the stone, shell, etc., in which they live, are covered with semispherical protuberances fitting into corresponding pits of the stone, etc. appears, according to LENDENFELD (21), to be in favour of LETELLIER's theory concerning the boring action of sponges.

### K. HABITS, BIONOMICS [cf. Titles 20, 21].

The great differences observed in the structure of the surface in *Vioas* and *Papillellas* are, according to LENDENFELD (21), to a great extent merely due to differences in the degree of retraction of the papillae. When these are extended, the sponge-surface appears highly papillous; when they are retracted, honeycombed.

Several species of *Vioa* and *Papillella* occur, both as free and as boring forms. It can hardly be doubted, thinks LENDENFELD (21), that many, if not all, boring sponges are able to grow out in the form of a free sponge, which may attain a very large size (*Vioa* [*Raphyrus*] *hixonii*), after having destroyed the stone, shell, etc. which they originally attacked.

Several cases of Symbiosis were observed by LENDENFELD (20, 21). The specimens of *Phyllospongia dendyi* var. *spiculifera* examined contained numerous Oscillarian Algae (20). *Stelospongia operculum* appears to grow on an ascidian and to cover its mouth with a moveable lamellar outgrowth (20). *Ficulina ficus* has the same habit of growing on shells inhabited by a hermit crab, as *Suberites domuncula*. In both the entrance to the cavity of the shell always remains open (21). Numerous commensals, Hydroids, Worms, etc. (21) live in *Suberites domuncula*. The varieties of *Suberites fugax* contain three kinds of symbiotic plants, *Beggiatoa*.

## 2. GEOGRAPHICAL DISTRIBUTION.

### A. GENERAL [cf. Titles 4, 12, 19, 21, 40].

BREITFUSS (4) draws attention to the poverty of tropical seas in Calcareous Sponges. In lat. 30° S. and N. the Calcareas become more numerous and from thence they constantly increase in numbers towards the poles.

GÜNTHER (12) mentions the abundance of Sponges on old cables from abyssal depths.

LENDENFELD (19) considers the Rockall-Sponge fauna nearly allied to the British.

LENDENFELD (21) states that of 30 Adriatic species of *Clavulina* only 10 have been found in the Mediterranean outside the Adriatic, but 20 outside the Mediterranean. This shows how little is known of the extra-Adriatic, Mediterranean sponge fauna.

Of the six species of Spongillids found in Eastern Africa only one, according to WELTNER (40), has also been found in other parts of the world.

### B. FAUNISTIC [cf. Titles 1, 2, 3, 4, 5, 8, 10, 11, 13, 14, 17, 19, 20, 21, 22, 24, 27, 31, 37, 38, 40, 41].

*Continent of Europe.*—FRÍČ & VÁVRA (10) mention two species of Spongillids from Bohemian lakes.—GARBINI (11) found spicules of four species

of Spongillids in the Lago di Garda, two of which (*Ephydatia robusta*, Potts and *Carterius tubisperma*, Potts) are new to the European fauna.—VANGEL (38) enumerates 5 species of Spongillids from the Platten-lake in Hungary.

*Continent of Asia*.—HOERNES (13) considers *Lubomirskia baicalensis*, Dyb. as a relict marine sponge and its presence in the Baikal a proof of the marine nature of that lake.

*Continent of Africa*.—MOORE (27) mentions sponges growing on *Neothauma* shells in Lake Tanganyika.—WELTNER (40) mentions 6 species of Spongillids from Eastern Africa.

*Continent of South America*.—AUSTEN (1) mentions two Spongillids from the lower Amazon.

*European coast of North Atlantic and Rockall*.—BRANDT (2) states that 26 species of Sponges occur in the Cattegat and 13 in the Bay of Kiel.—MARSHALL (24) enumerates the Sponges most frequently occurring on the German coast.—LENDEFELD (19) describes 7 species of Sponges from Rockall.

*Mediterranean*.—RICHARD & NEUVILLE (31) describe Sponges from the Alboran Island.—LENDEFELD (21) describes 30 species of *Clavulina* from the Adriatic. Of the 10 families and 26 genera of *Clavulina* recognized by him, 8 families and 15 genera occur in the Adriatic.—BREITFUSS (3) describes a Calcareous Sponge from the Adriatic.

*Northern Pacific, Asiatic coast and Islands*.—IJIMA (14) describes 9 species of Hexactinellids from Sagami Bay.—LINDGREN (22) describes 30 species of *Silicea* from the Chinese sea.—ELERA (8) mentions 14 species of *Silicea* from the Philippines.

*East Indies*.—LINDGREN (22) describes 31 species of *Silicea* from the coast of Java.—TOPSENT (37) describes one calcareous Sponge and 80 species of *Silicea* from Ambon.—BREITFUSS (4) describes 6 species of *Calcarea* from Ternate.

*African coast of Indian Ocean*.—LENDEFELD (20) describes 17 species of *Silicea* from Zanzibar.

*South Pacific, Australia and Islands*.—DENDY (5) describes 40 species of *Silicea* from Port Phillip Heads.—LENDEFELD (17) mentions 5 species of *Cornacuspongia* from the Auckland Islands.—WHITELEGGE (41) describes 16 species from Funafuti.

### 3. GEOLOGICAL DISTRIBUTION [cf. Titles 7, 29, 41].

*Lower Silurian*.—DUN (7) describes a *Protospongia* from Stockyard Creek, co. Alexander, New South Wales.

*Jurassic*.—OPPLIGER (29) describes 39 Hexactinellids, 22 Lithistids and 10 Pharetrones from Baden, Switzerland.

*Cretaco-Jurassic*.—ZEISE (41) describes 29 *Silicea* and 27 *Calcarea* from Stramberg.

### 4. PHYLOGENY and CLASSIFICATION [cf. Titles 6, 9, 14, 18, 21, 25, 26, 34, 36].

FRANCÉ (9) does not believe that the Sponges are related to the choanoflagellate Protozoa.

MINCHIN (26) discusses the views held by different authors concerning the phyletic relationship of Sponges with other organisms and their systematic position. He thinks that every one of the existing hypotheses on this subject is open to grave objections. The least objectionable seems to him the one according to which the Sponges form a separate phylum within the Metazoa.

LENDEFELD (18) shortly discusses the arrangement of Sponges in six orders.

MINCHIN (25) upholds the name *Ascandra* versus LENDENFELD.

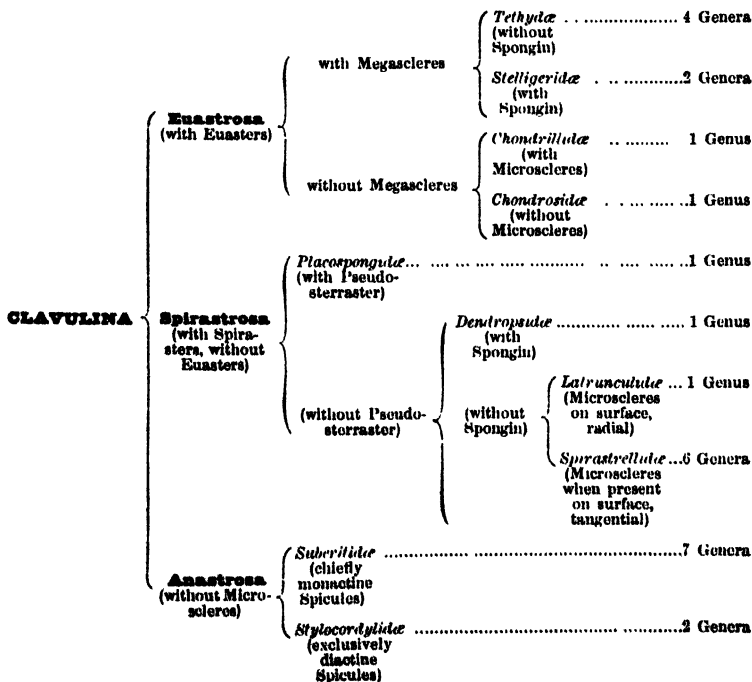
DÖDERLEIN (6) considers his *Petrostroma* allied to the Pharetrones and to *Lelapia*.

IJIMA (14) wishes to combine all Hexactinellids with discostasters in one subfamily. He thinks that this group is natural and divided by a wide gap from the other Rossellidæ.

F. E. SCHULZE (34) has now come to the conviction that the deeply situated microscleres are peculiarly conservative in character. He therefore considers their shape as being of greater systematic value than was hitherto supposed, and he now attaches less value to external characters than he did formerly. The diagnoses of some families are modified and some genera joined or suppressed in consequence: *Balanella* joined to *Caulophacus*; *Pleorhabdus* suppressed; *Craterochone* joined to *Aulochone*.

LENDENFELD (21) accepts Vosmaer's division of the *Monaxonida* into *Clavulina* and *Cornacuspongix* with some emendations. Asterose Microscleres, monactine Megasccleres and the want of Spongin are characters of the *Clavulina*; meniscoid Microscleres, diactine Megasccleres and Spongin characters of the *Cornacuspongix*. The *Suberites*, *Tethydx* and *Spirastrellidæ* form the types of the *Clavulina*, the *Desmucidonidæ*, *Renieridæ* and *Spongidæ* the types of the *Cornacuspongix*. The doubtful forms are so arranged, that all which have asterose Microscleres (whether they possess a horny skeleton or not) and also the forms with diactine Megasccleres which resemble the typical *Clavulina* in the structure of their soft parts, are placed in the *Clavulina*; the rest in the *Cornacuspongix*. The *Cornacuspongix* are supposed to be descended—polyphyletically—from the *Clavulina*.

The scheme of classification of the *Clavulina* proposed by LENDENFELD (21) is the following:



According to this the Order *Monaxonida* is divided into two suborders, *Clavulina* and *Cornacuspongia*, and the *Clavulina* into three tribes, 10 families and 26 genera.

TOPSENT (36) proposes to place the genus *Halicnemis*, which he now considers nearly related to *Higginsia*, in the *Axinellidæ*.

### 5. METHODS [cf. Title 32].

ROUSSEAU (32) has successfully decalcified calcareous Sponges without injuring the soft parts by imbedding in celloidin, treating the imbedded piece with 85% alcohol and nitric acid and washing out in the presence of carbonate of lime; and finally sectioning. An analogous method with hydrofluoric instead of nitric acid gives good results when applied to siliceous Sponges.

## III. SYSTEMATIC.

### CALCAREA.

#### HOMOCÆLA [cf. Titles 3, 18, 25].

*Ascandra hermesii*, BREITFUSS, Zeitschr. wiss. Zool. lxiii, p. 39, n. sp.

*Ascetta primordialis*, LENDENFELD, Zool. Garten, xxxviii, p. 11, re-described.

#### HETEROCÆLA [cf. Titles 6, 18, 41].

ZEISE, Palæontogr. ii (Suppl.) establishes the following new genera:

†*Strambergia*, n. g., p. 330;

†*Rauffia*, n. g., p. 326;

†*Euzittelia*, n. g., p. 329.

ZEISE, Palæontogr. ii (Suppl.) describes the following new species:

†*Peronidella tithonica*, p. 315;

†*Corynella moravica*, p. 321;

†*Myrmecium grande*, p. 324;

†*Crisispongia conica*, p. 325;

†*Rauffia clavata*, p. 326;

†*Euzittelia magnifica*, p. 329;

†*Tremacystia hindei*, p. 331, *tithonica*, p. 332;

†*Thalamopora zitteli*, p. 336, *hokeneggeri*, p. 338; and several other new fossil genera and species, to which however he gives no names because he considers the material at his disposal insufficient.

*Petrostroma schulzei*, DÖDERLEIN, Zool. Jahrb. Syst. x, p. 15, re-described.

*Sycandra raphanus*, LENDENFELD, Zool. Garten, xxxviii, p. 44, re-described.

### SILICEA.

#### TRIAXONIA.

#### HEXACTINELLIDA [cf. Titles 14, 18, 29, 34, 41].

*Mellonympha*, n. g., F. E. SCHULZE, SB. Ak. Berlin, xxvi, p. 547 (sep. p. 28), for *Rossella velata*, Wyv. Thoms.

*Staurocalyptus*, n. g., IJIMA, Annot. zool. Japon, i, p. 53.

IJIMA, Annot. zool. Japon, i, describes the following new species :

*Rhabdocalyptus capillatus*, p. 51, *victor*, p. 52 ;

*Staurocalyptus ræperi*, p. 55, *heteractinus*, p. 56, *glaber*, p. 57.

†*Trematodictyon regulare*, ZEISE, Palæontogr. ii (Suppl.), p. 297, n. sp.

†*Craticularia intrasulcata*, ZEISE, t. c. p. 299, n. sp.

ZEISE, t. c., describes several other new fossil genera and species, to which however he gives no names because he considers the material at his disposal insufficient.

OPPLIGER, Abh. Schweiz. pal. Ges. xxiv, describes †*Pachyteichisma mæandrina*, p. 15, and *turbinatum*, p. 16, hitherto only known as MS. names of ZITTEL ; also a new species :

†*Trochobolus cuneiformis*, p. 19 ; and several other apparently new fossil species, to which however he attaches no names.

*Bathydorus uncifer*, F. E. SCHULZE, Verh. Deutsch. zool. Ges. vii, p. 37, n. sp. (no diagnosis).

*Euplectella aspergillum*, LENDENFELD, Zool. Garten, xxxviii, p. 46, re-described.

## HEXACERATINA [cf. Title 18].

*Dendrilla rosea*, LENDENFELD, Zool. Garten, xxxviii, p. 50, re-described.

## TETRAXONIA.

### TETRAXONIDA.

TETRACTINELLIDA [cf. Titles 15, 18, 20, 22, 37].

LINDGREN, Zool. Anz. xx, describes the following new species :

*Stelletta tenuis*, p. 485 ;

*Erylus decumbens*, p. 485 ;

*Caminus chinensis*, p. 485 ;

*Geodia distincta*, p. 486, *arripiens*, p. 486 ;

*Isops nigra*, p. 486.

TOPSENT, Rev. Suisse Zool. iv, establishes the new genus :

*Placinolopha*, n. g., p. 429 ;

and describes the following new species :

*Placinolopha Bedoti*, p. 429 ;

*Sydonops picteti*, p. 431 ; and

*Pilochrota brevidens*, p. 433.

*Pachastrella stylifera*, LENDENFELD, Tr. Irish Ac. xxxi, p. 82, n. sp.

LENDENFELD, Abh. Senckenb. Ges. xxi, describes the following new species :

*Ancorina simplex*, p. 96 ;

*Isops carcinophila*, p. 99 ;

*Cinachyra voeltzkowi*, p. 101.

*Stelletta hispida*, LENDENFELD, Zool. Garten, xxxviii, p. 71, re-described.



## LITHISTIDA [cf. Titles 29, 42].

OPPLIGER, Abh. Schweiz. pal. Ges. xxiv, describes the following new species:

†*Platychonia wittingensis*, p. 46, *tumida*, p. 46, *conchiformis*, p. 47;

†*Lecanella complanata*, p. 49;

besides other fossils to which he gives no names. He describes also a new fossil genus, which however he does not name.

ZEISE, Palæontogr. ii (Suppl.), describes the new species:

†*Siphonia strambergensis*, p. 305;

†*Ierea tithonica*, p. 306; and

several other new fossil genera and species, which however he does not name.

## MONAXONIDA.

## CLAVULINA [cf. Titles 5, 20, 21, 22, 36, 41].

DENDY, P. Soc. Victoria, ix, describes the following new species:

*Suberites spirastrelloides*, p. 247, *difficilis*, p. 248;

*Spirastrella fibrosa*, p. 254, *areolata*, p. 255;

*Pronax carteri*, p. 257.

LINDGREN, Zool. Anz. xx, describes the new species:

*Dorypteres biangulata*, p. 483;

*Spirastrella aurivillii*, p. 484, *semilunaris*, p. 484;

*Latrunculia lævis*, p. 484.

*Spirastrella carnosa*, TOPSENT, Rev. Suisse Zool. iv, p. 441, n. sp.

LENDENFELD, Abh. Senckenb. Ges. describes the new species:

*Tethya globostellata*, p. 104;

*Chondrilla nuda*, p. 105;

*Vicia florida*, p. 108.

TOPSENT, Mem. Soc. zool. France, x, redescribes:

*Halicnemis patera*, p. 235, *verticillata*, p. 243, *constellata*, p. 245.

LENDENFELD, Acta Ac. German. lxix, establishes the new genera:

*Suberanthus*, n. g., p. 144;

*Astrominus*, n. g., p. 148; and

describes the following new species:

*Asteropus incrustans*, p. 31;

*Stelligera nux*, p. 46;

*Placospongia græffei*, p. 48;

*Vicia topsentii*, p. 78, *ramosa*, p. 81;

*Suberites gracilis*, p. 130;

*Astrominus luteus*, p. 148;

and redescribes:

*Tethya lyncurium*, p. 15;

*Xenospongia johnstoni*, p. 30;

*Chondrilla nucula*, p. 34;

*Chondrosia reniformis*, p. 38;

*Stelligera stuposa*, p. 43;

*Placospongia melobesioides*, p. 53;

*Spirastrella bistellata*, p. 55;  
*Vicia viridis*, p. 58, *schmidtii*, p. 72, *vastifica*, p. 86;  
*Ficulina ficus*, p. 94;  
*Papillella suberea*, p. 99, *quadrata*, p. 106;  
*Polymastia robusta*, p. 111, *bursa*, p. 117;  
*Suberites domuncula*, p. 118, *massa*, p. 127, *fugax*, p. 132, *longispinus*,  
 p. 137, *arcicola*, p. 139, *aaptus*, p. 140;  
*Suberanthus fluvius*, p. 144.

WHITELEGGE, Mem. Austral. Mus. iii, p. 330, describes:  
*Polymastia dendyi*, n. sp.

## CORNACUSPONGIÆ.

*Marine Forms* [cf. Titles 5, 18, 19, 20, 22, 33, 37, 41].

DENDY, P. Soc. Victoria, ix, establishes the new genera:

*Sigmazinella*, n. g., p. 240;  
*Pseudoclathria*, n. g., p. 258;

and describes the following new species:

*Axinella clathrata*, p. 233, *kirkii*, p. 235;  
*Phakellia tumida*, p. 236;  
*Acanthella tenuispiculata*, p. 238;  
*Sigmazinella australiana*, p. 240, *ciocalyptoides*, p. 242;  
*Rhaphisia pallida*, p. 257.

LINDGREN, Zool. Anz. xx, describes the following new species:

*Halichondria variabilis*, p. 480, *armata*, p. 480, *aura*, p. 480;  
*Petrosia nigricans*, p. 480;  
*Chalina pulvinata*, p. 481;  
*Siphonochalina truncata*, p. 481;  
*Gellius strongylatus*, p. 481;  
*Esperella macrosigma*, p. 482;  
*Dendoryx mollis*, p. 482;  
*Clathria ramosa*, p. 482;  
*Raphidophlus Ridleyi*, p. 483.

SCHULZ, Anatomische und Histologische Untersuchungen... describes the new species:

*Euspongia distans*, p. 15;  
*Cacospongia erecta*, p. 23.

TOPSENT, Rev. Suisse Zool. iv, describes the following new species:

*Desmacella fortis*, p. 463;  
*Stylotella cornuta*, p. 464, *conulosa*, p. 466;  
*Oceanapia amboinensis*, p. 467, *fragilis*, p. 469;  
*Gellius toxius*, p. 470, *glaberrimus*, p. 471, *hispidulus*, p. 472;  
*Pellina integra*, p. 472;  
*Reniera pulvinar*, p. 475;  
*Halichondria cavernosa*, p. 477;  
*Pachychalina joubini*, p. 480;  
*Cacochalina mollis*, p. 481;  
*Chalina similis*, p. 481;  
*Dysideopsis palmata*, p. 482.

LENDENFELD, Abh. Senckenb. Ges. xxi, establishes the new genera:

*Strongylacidon*, n. g., p. 110;  
*Axinyssa*, n. g., p. 116;

and describes the following new species :

*Strongylacidon sansibarense*, p. 110 ;

*Tedania digitata*, p. 112 ;

*Phacellia weltnerii*, p. 114 ;

*Axinyssa topsentii*, p. 116 ;

*Reniera bawiana*, p. 119 ;

*Stelospongia operculum*, p. 124.

LENDENFELD, Tr. Irish Ac. xxxi, describes the new species :

*Thrinacophora microdragma*, p. 84 ;

*Gellius styliferus*, p. 87.

*Euspongia officinalis*, LENDENFELD, Zool. Garten, xxxviii, p. 74, redescribed.

WHITELEGGE, Mem. Austral. Mus. iii, describes the following new species from Funafuti :

*Spinoseella glomerata*, p. 326 ;

*Gellius aculeatus*, p. 326 ;

*Clathria pellicula*, p. 327 ;

*Agelas gracilis*, p. 328 ;

*Crocalypta incrustans*, p. 329.

## SPONGILLIDÆ.

(Nothing.)

## XVIII. PROTOZOA.

BY

ALBERT WM. BROWN, B.A., F.L.S.,

*Christ Church, Oxford.*

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## INTRODUCTION.

THE Record for 1897 is again somewhat smaller than its predecessors. The steady decline in the number of papers published on Protozoa for the past four years is noteworthy and is principally due to a diminution of the energy with which certain pathological problems were till recently attacked.

Perhaps the event calling most for remark here is the conclusion of RUPERT JONES' "Monograph of the *Foraminifera* of the Crag" (20) begun so many years ago; whilst the same author and Mr FREDERICK CHAPMAN conclude their joint work on "The Fistulose *Polymorphinae* and on the genus *Ramulina*" (71). LISTER (96), in the Proceedings of the Cambridge Philosophical Society, has attempted an explanation of the arrangement of the chambers in the biloculine and triloculine

*Foraminifera*. BURROWS & HOLLAND (12) have monographed the *Foraminifera* of the Thanet Beds of Pegwell Bay.

CAYEUX (19) has published a lengthy paper on the *Radiolaria* found in certain sedimentary deposits.

*Amœba* has come in for a good deal of attention during the year; many experiments on culture having been made with it. The papers of BEYERINCK (5), CASAGRANDE and BARBAGALLO (15), SCHARDINGER (136) and TISCHUTKIN (158) should be consulted in this connection. The importance of *Amœba* in pathology is receiving increased recognition, as reference to the subject-index will shew. Under this heading, BEHLA's (4) pamphlet on "Amœba from a parasitic standpoint" requires special mention. PROWAZEK (126) publishes a number of notes on the same animal, that dealing with contractile vacuole is most important, and SMITH (151) describes the sporular development of "*Amœba villosa*."

Various aspects of Protozoan physiology have been dealt with during the year. The first volume of DAVENPORT's "Experimental Morphology" (31) deals almost entirely with results obtained from experiments on this group. JENNINGS (68) in the first part of a series of papers discusses the "Reactions to stimuli in unicellular organisms." HERRERA's experiments on artificial *Infusoria* should be noted (62), and DANTEC's work on the regeneration of the Nucleus (30).

HERTWIG has given us two valuable and interesting contributions, one on the reproduction of *Rhizopoda* (63) and the other on karyokinesis in *Actinosphaerium* (64).

A miscellaneous series of papers must be next dealt with. DALLINGER (29) replies to certain criticisms of his work on the "*Biflagellata*" in the Biol. Centrbl. LUSTRAC (98) describes "*Trypanosoma balbianii*," DOFFLEIN (33) "*Kentrochona*" and "*Kentrochonopsis* n. g." and WALLENGREN "*Trichodina*" (163) and "*Pleurocopsis hydractinia*," whilst BORGERT (9) gives an account of certain parasitic forms.

The pathological and parasitic questions connected with this group receive their due share of attention. JANOWSKI (67) in a series of papers discusses the Ætiology of Dysentery. The *Hæmatozoa* of Malarial Fever form the subject of many contributions of which those by CELLI & SANTORI (20, 21), DOMINICI (35), FACCIOLO (41), LAVERAN (77), LEWKOWICZ (93), MACCULLUM (99) and ZIEMANN (171) appear to be the principal. The *Hæmatozoa* of Birds are described by MACCULLUM (100 and 101) and OPIE (117), and of Nematodes by MANSON (103), who also publishes directions for staining these peculiar flagellates.

The *Sporozoa* still appear to command more interest than other classes. New and other forms are considered by CAULLERY & MESNIL (17, 18 and 107), LABRÉ and RACOVITZA (76), LAVERAN (78, 79), LÉGER (84-87 and 89), MESNIL and MARCHOUX (108), PENARD (118) and PORTER (125), LENNSEN (90) announces the discovery of a Sporozoon in *Rotifera*, whilst CUÉNOT describes those in the cælom of the cricket. METSCHNIKOFF (109) discusses the flagellated phase of *Coccidia*. LÉGER in other publications has studied the origin of the plasmodium of *Lithocystis* (80), the biology of the same animal (82), the life-history of *Coccidia* of *Arthropoda* (81) and also gives some account of his experimental studies on *Coccidia* (83).

Systematic works on the Protozoa are few this year. FRANCÉ (44) describes new and other forms from the Balaton Sea, and FUHRMANN (51) lists the fauna of the Alpine Lakes of Tessin.

The increase in papers dealing with Plankton is noteworthy. Of importance are AURIVILLIUS (2) on the Plankton of Baffin's Bay, PITARD (119-123) and ZACHARIAS (169). Plankton methods are considered by FRENZEL (47) and HENSEN (58) and severely criticised by KOFOID (74).

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## II. BIOLOGY.

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